

KIC 004680002

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004680002-01	OBS	No	1.157097	132.336159	97.1	3.495	11.1	9.1	4.30	7192	4.99	60179.07
004680002-02	OBS	No	0.578554	132.050659	85.4	3.520	8.0	10.1	4.30	7192	4.67	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004680002-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004680002-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

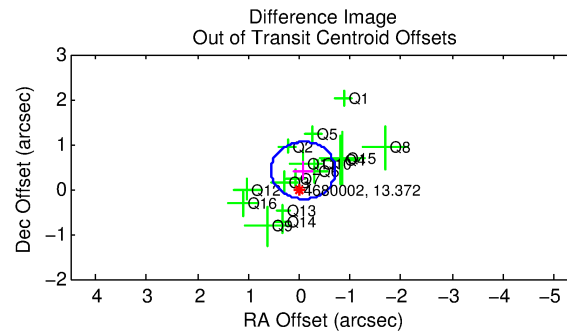
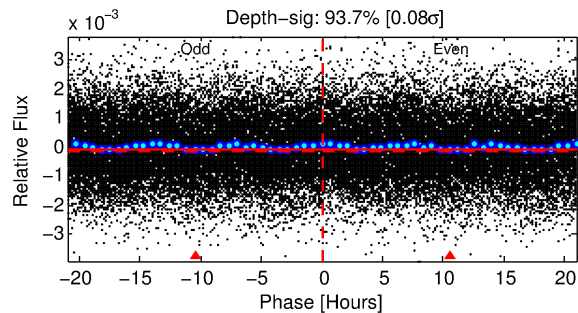
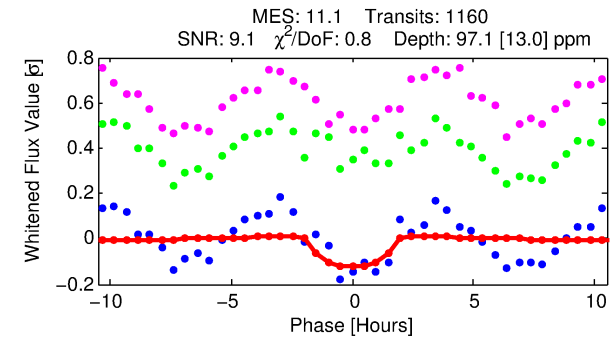
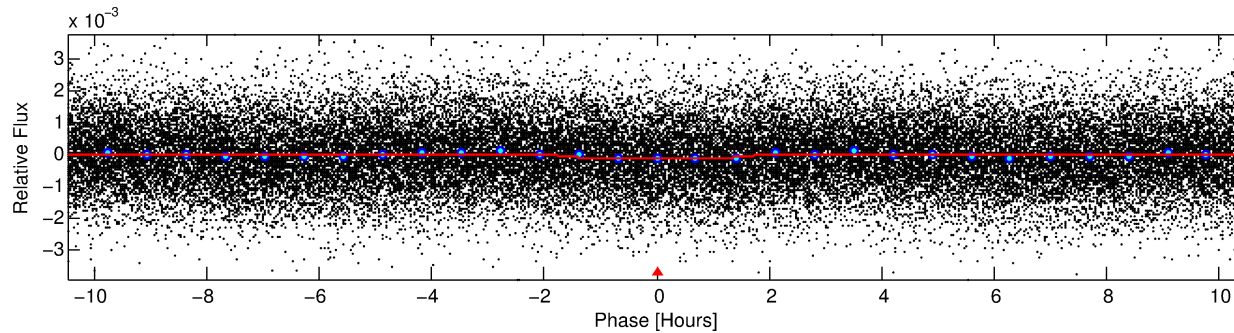
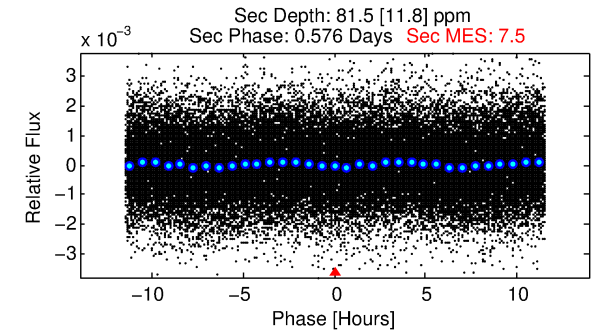
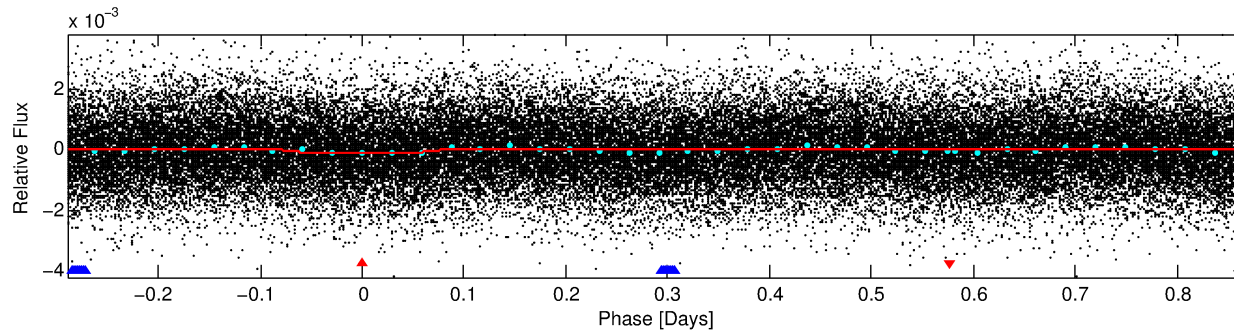
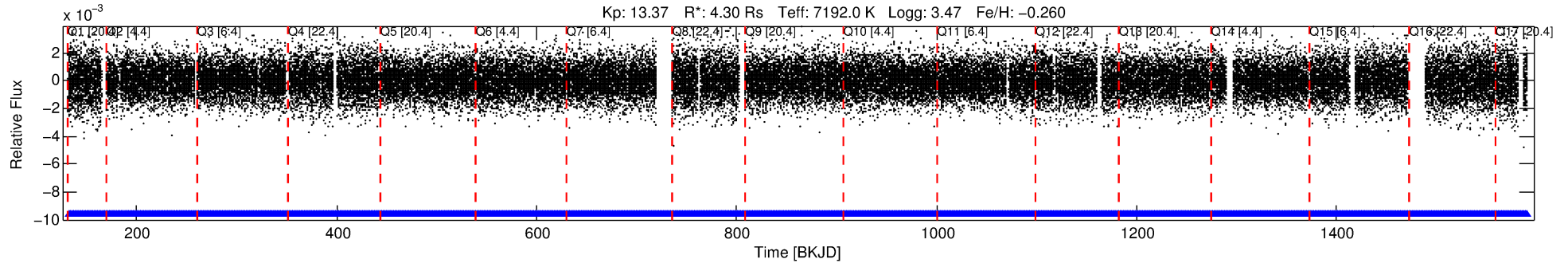
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004680002-01

No Significant Match Found

DV One-Page Summary

KIC: 4680002 Candidate: 1 of 2 Period: 1.157 d



DV Fit Results:

Period = 1.15710 [0.00001] d
Epoch = 132.3362 [0.0053] BKJD
Rp/R* = 0.0106 [0.0080]
a/R* = 1.49 [3.44]
b = 0.90 [0.89]
Seff = 60179.07 [63461.60]
Teq = 3994 [1053] K
Rp = 4.99 [4.80] Re
a = 0.0271 [0.0168] AU
Ag = 1.32 [2.43] [0.13σ]
Teffp = 6625 [2544] K [0.96σ]

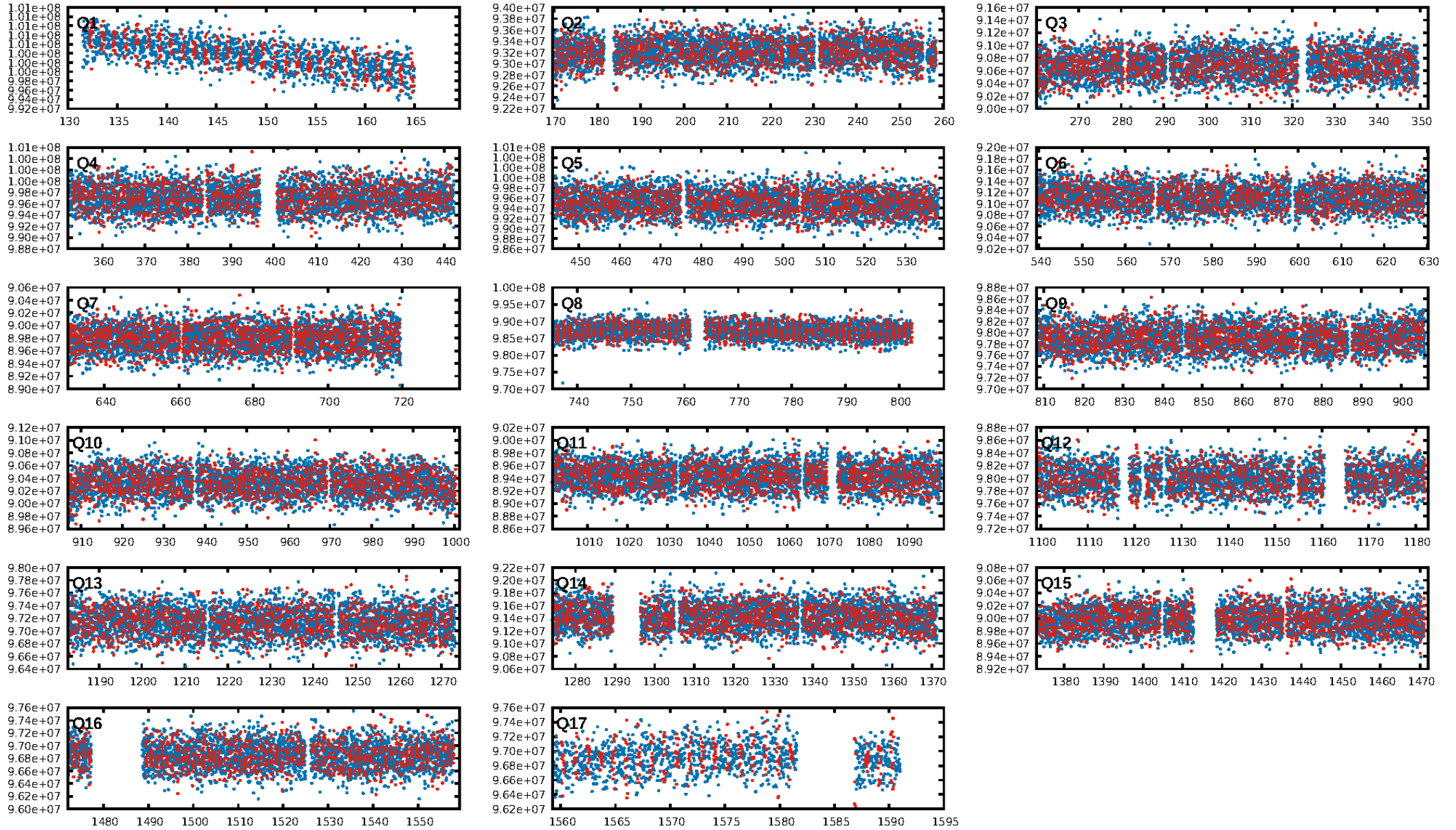
DV Diagnostic Results:

ShortPeriod-sig: 99.5% [2.80σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.90e-31
RollingBand-fgt: 1.00 [1108/1108]
GhostDiagnostic-chr: 2.402
Centroid-sig: 0.4%
Centroid-so: 0.488 arcsec [1.37σ]
OotOffset-rm: 0.422 arcsec [1.99σ]
KicOffset-rm: 0.441 arcsec [2.13σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 0.00 [0/17]

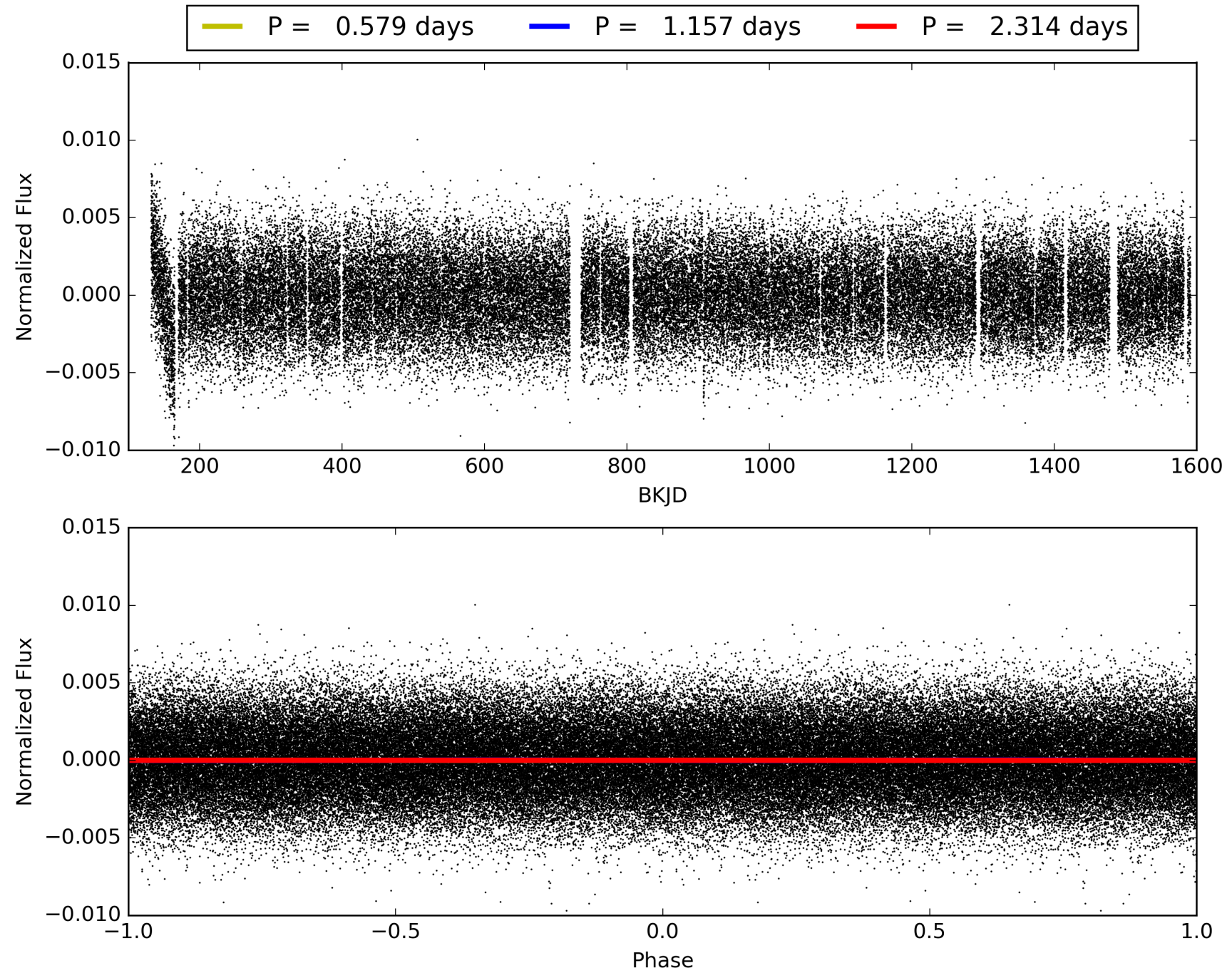
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:34:25 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004680002-01, PDC Light Curves

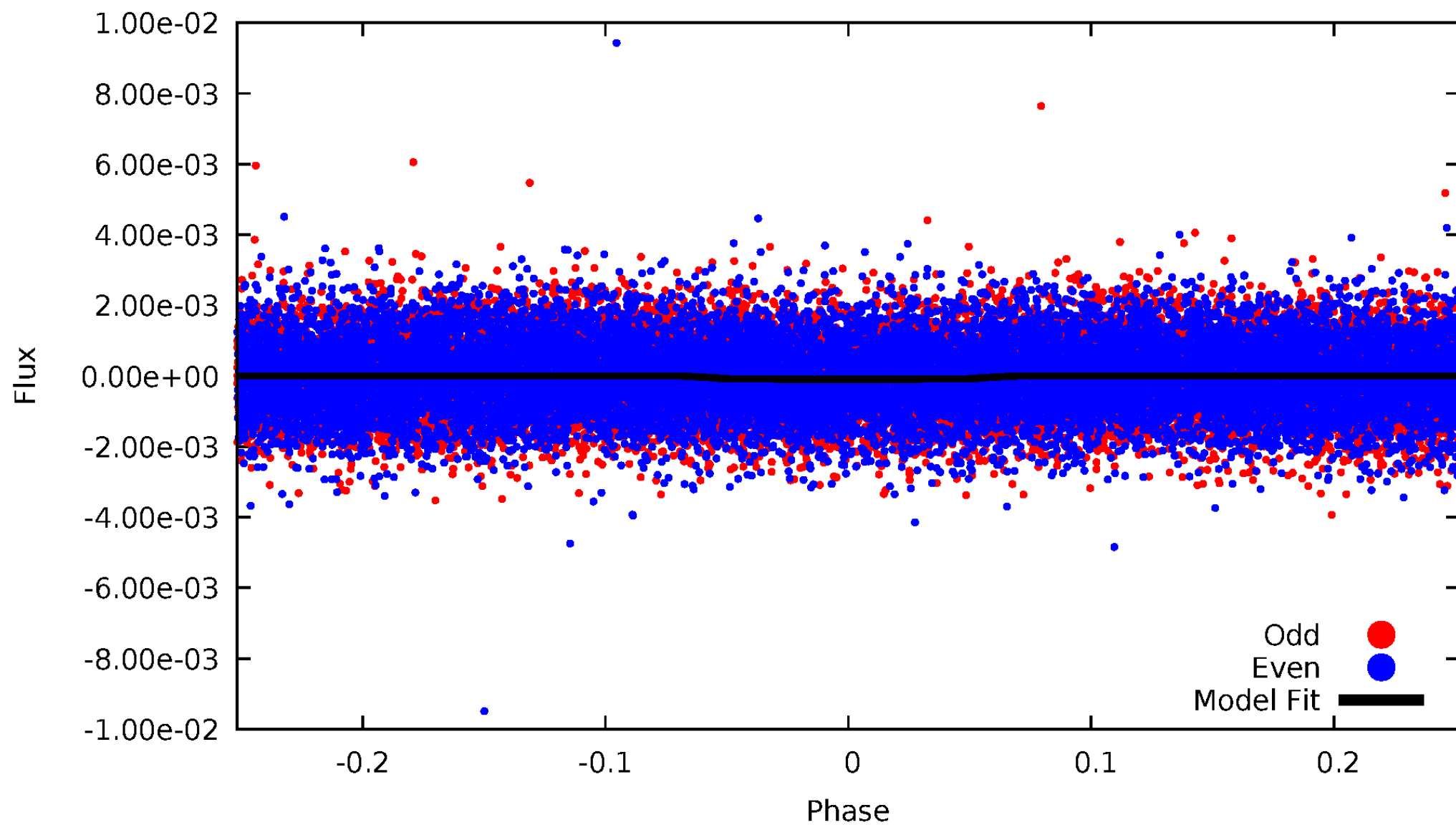


TCE 004680002-01



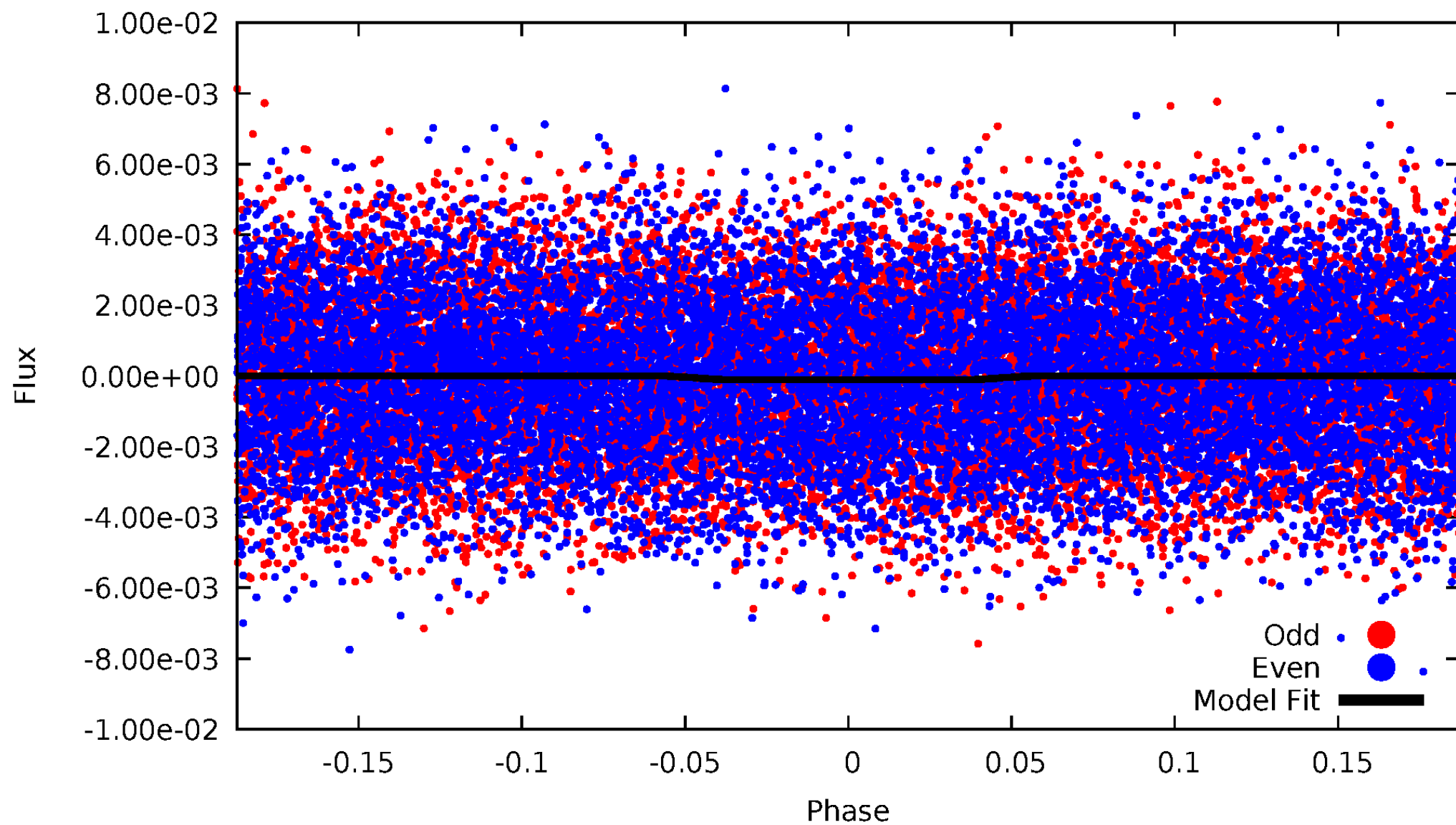
DV Odd/Even

TCE 004680002-01

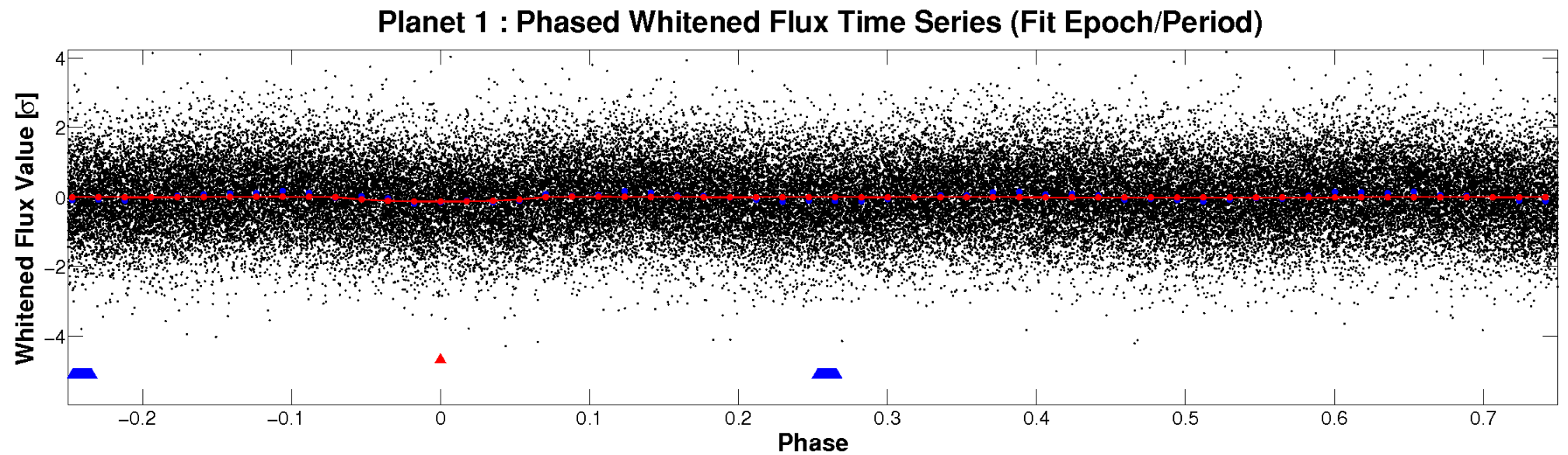
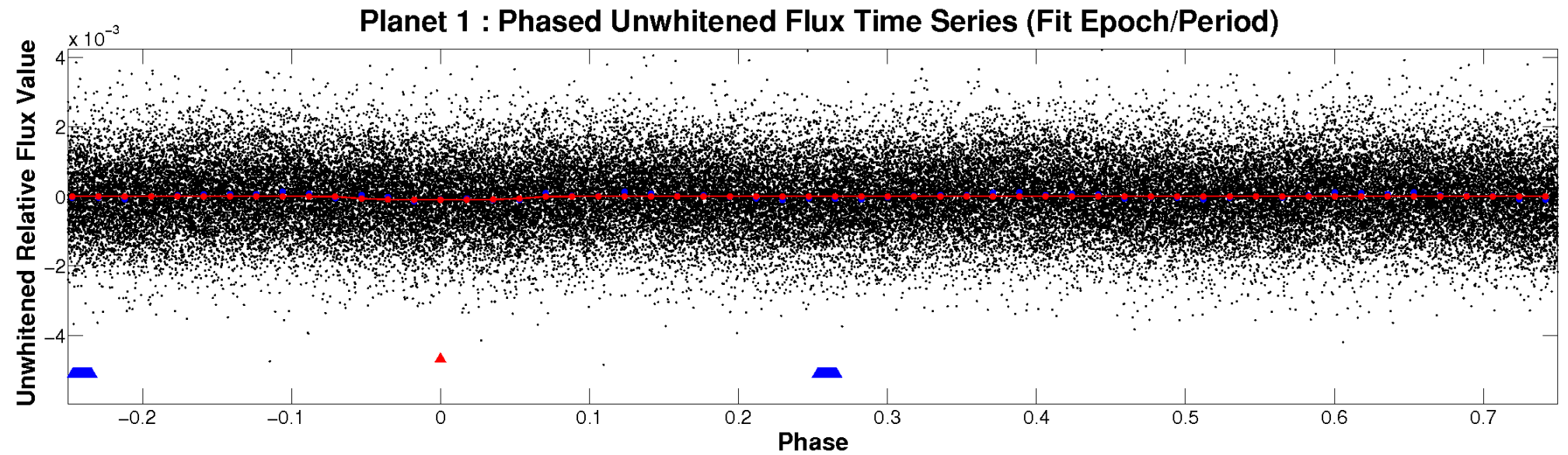


ALT Odd/Even

TCE 004680002-01

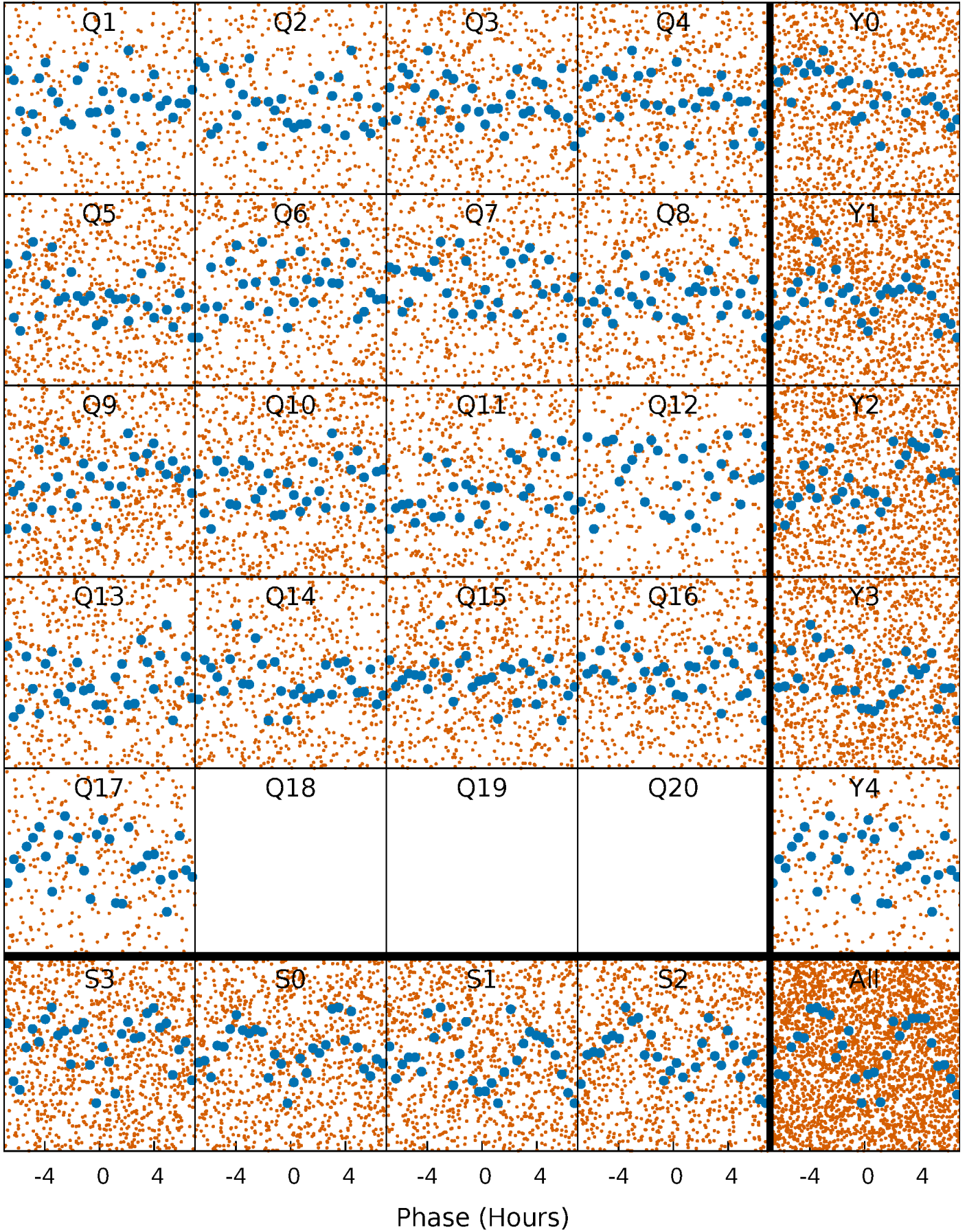


Non-Whitened Vs. Whitened Light Curve



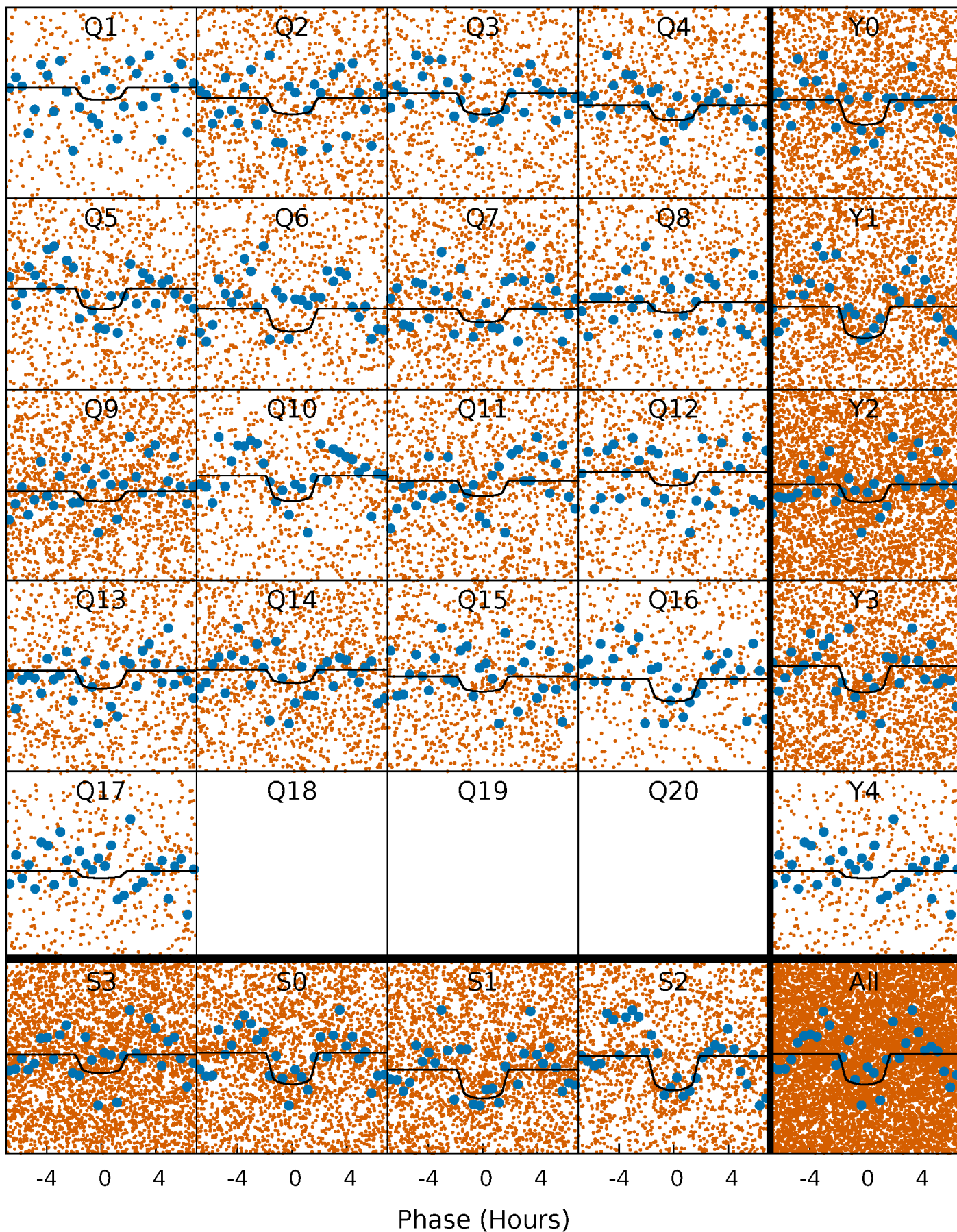
PDC Quarter-Phased Transit Curves

TCE 004680002-01 P= 1.157097 Days $T_0=132.336159$ (BKJD)



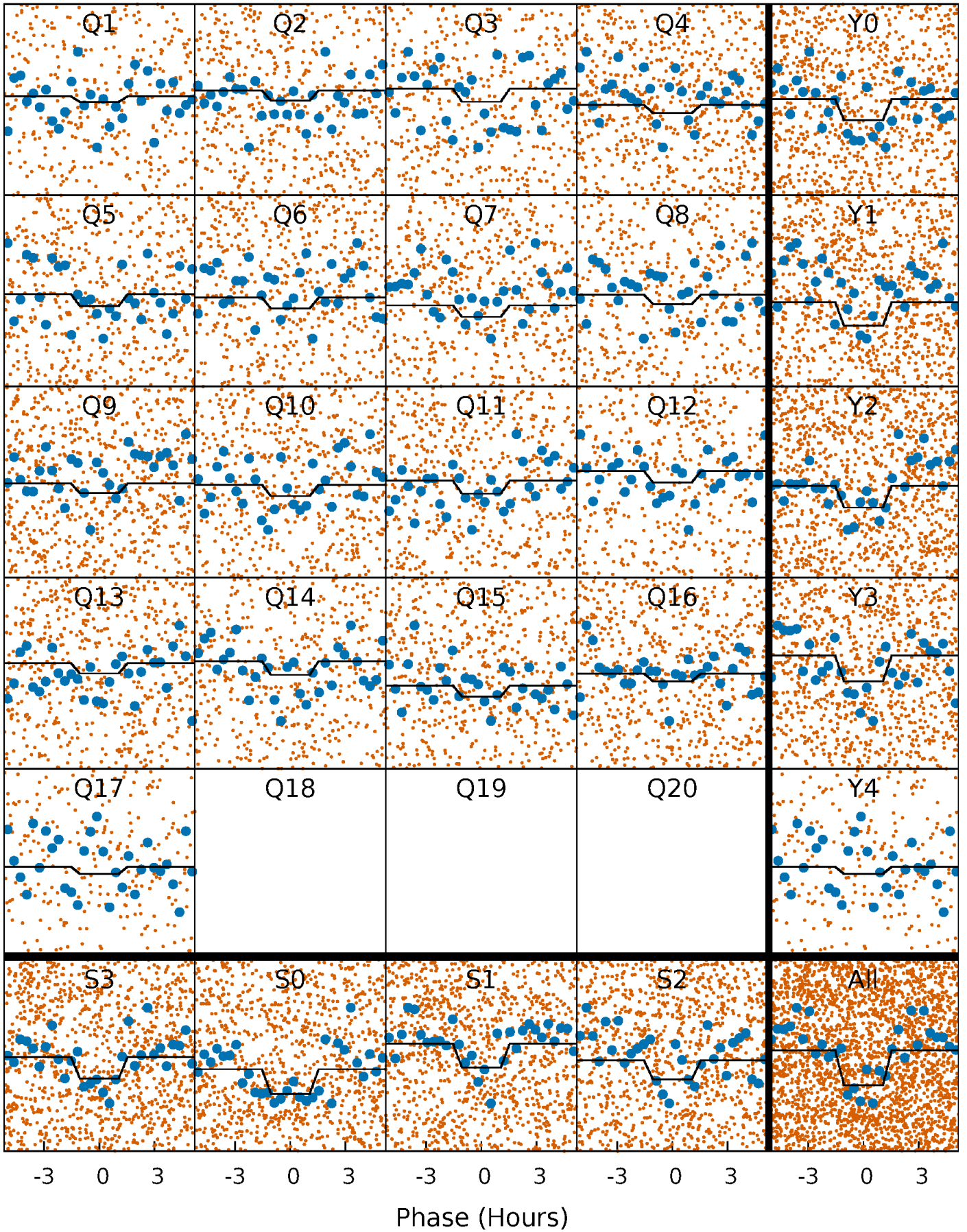
DV Quarter-Phased Transit Curves

TCE 004680002-01 P= 1.157097 Days $T_0=132.336159$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

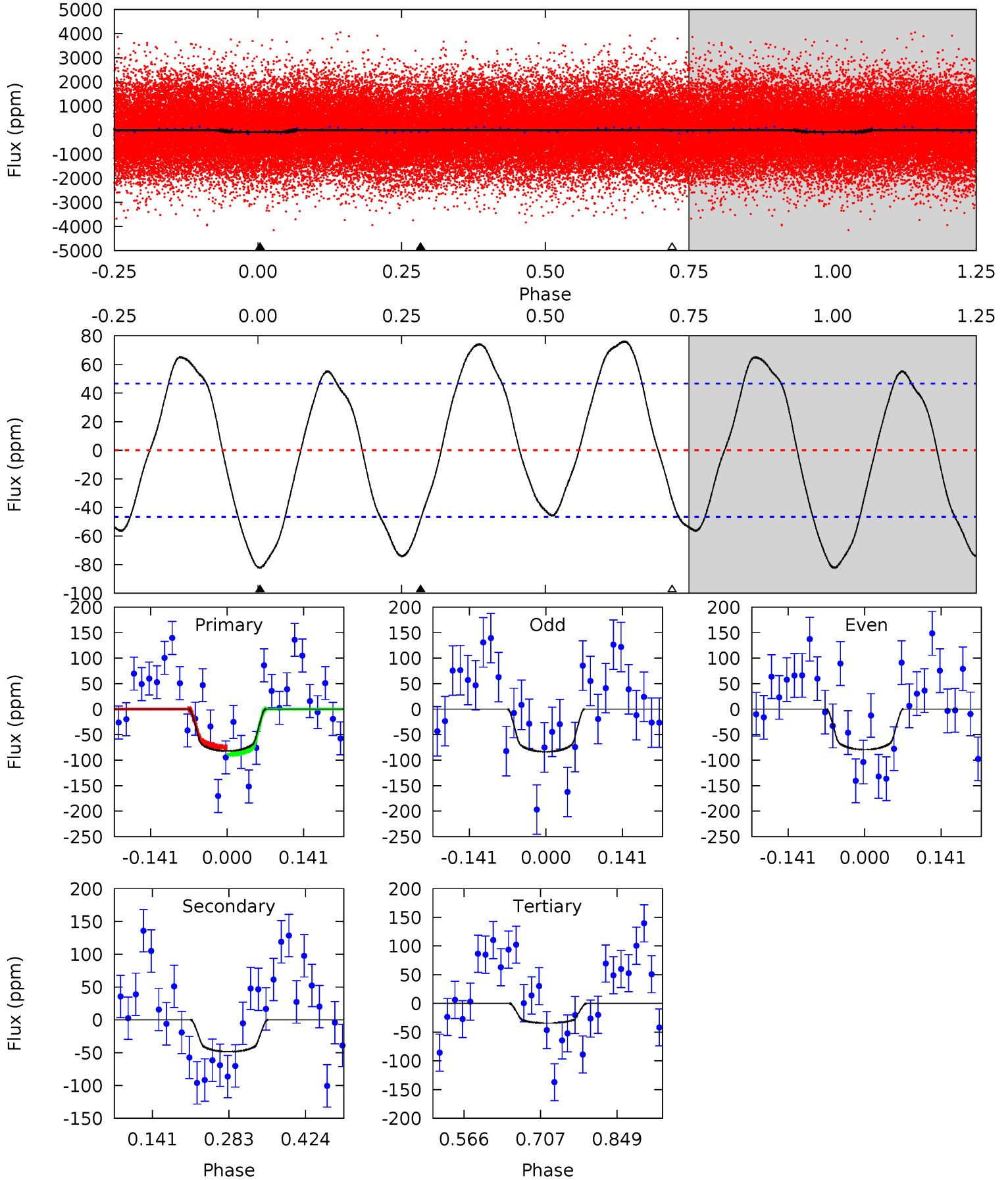
TCE 004680002-01 P= 1.157117 Days $T_0=132.337178$ (BKJD)



DV Model-Shift Uniqueness Test

004680002-01, P = 1.157097 Days, E = 131.179062 Days

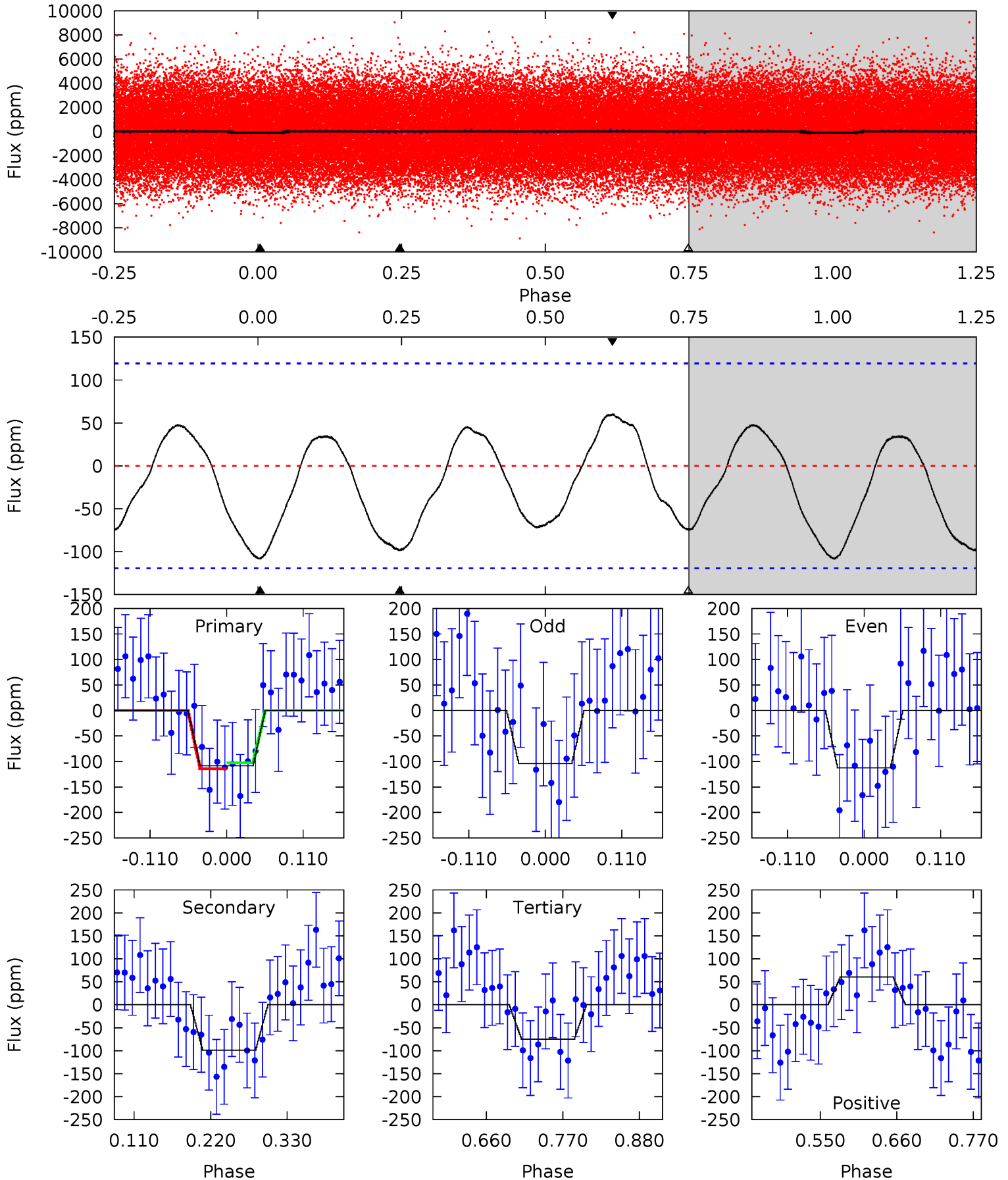
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.93	4.68	3.31	0	4.49	1.47	4.06	4.62	7.93	1.37	4.68	0.21	0.97	0.48	0.64



Alt Model-Shift Uniqueness Test

004680002-01, P = 1.157117 Days, E = 131.180061 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.13	3.77	2.84	2.30	4.54	1.60	1.68	1.29	1.84	0.93	1.48	0.16	0.90	0.36	0.22



Stellar Parameters For KIC 004680002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7192^{+285}_{-392}	$3.470^{+0.621}_{-0.073}$	$-0.260^{+0.300}_{-0.300}$	$4.300^{+0.449}_{-2.546}$	$1.989^{+0.074}_{-0.668}$	$0.035^{+0.370}_{-0.008}$
	+4%/-5%	+18%/-2%	+115%/-115%	+10%/-59%	+4%/-34%	+1050%/-24%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004680002-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-49 ± 10	$4.60^{+3.47}_{-2.79}$	5291^{+523}_{-803}	4940^{+3765}_{-7906}	$0.891^{+4.516}_{-0.614}$
Alt.	-99 ± 26	$4.40^{+3.64}_{-2.65}$	5299^{+492}_{-786}	6234^{+5242}_{-1798}	$1.924^{+10.946}_{-1.341}$

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

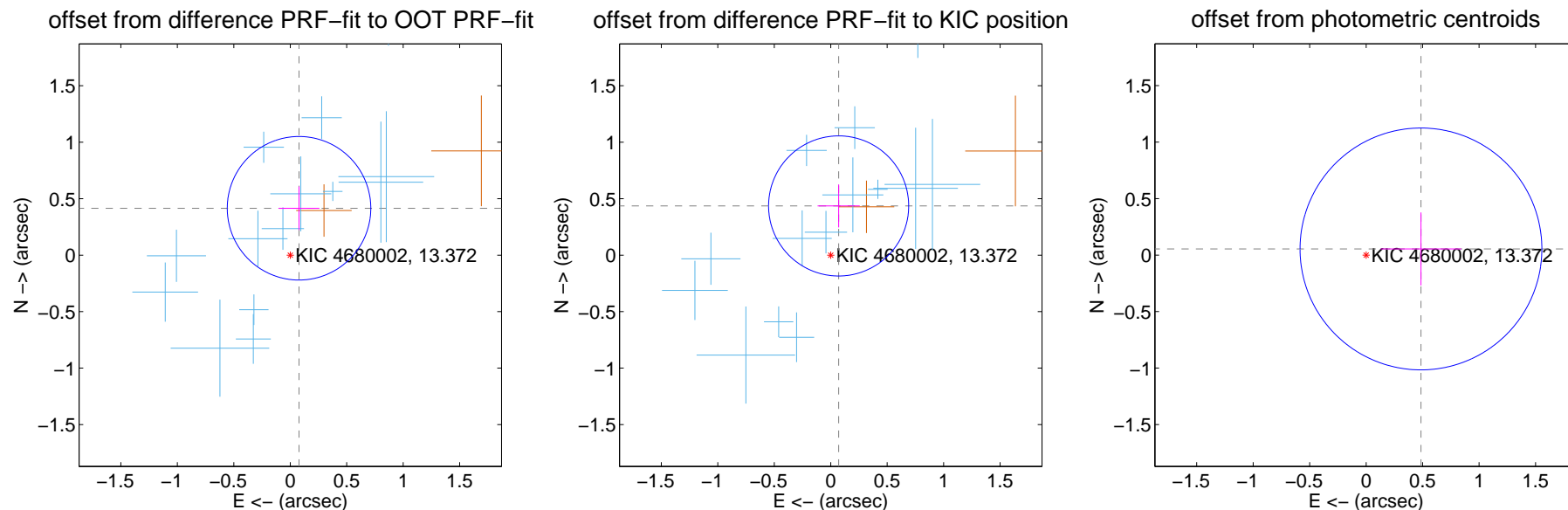
DV Centroid Data

Supplemental centroid analysis for 004680002-01. Kepler magnitude: 13.37. Transit SNR 9.06

There are 14 quarters with good PRF difference image offsets

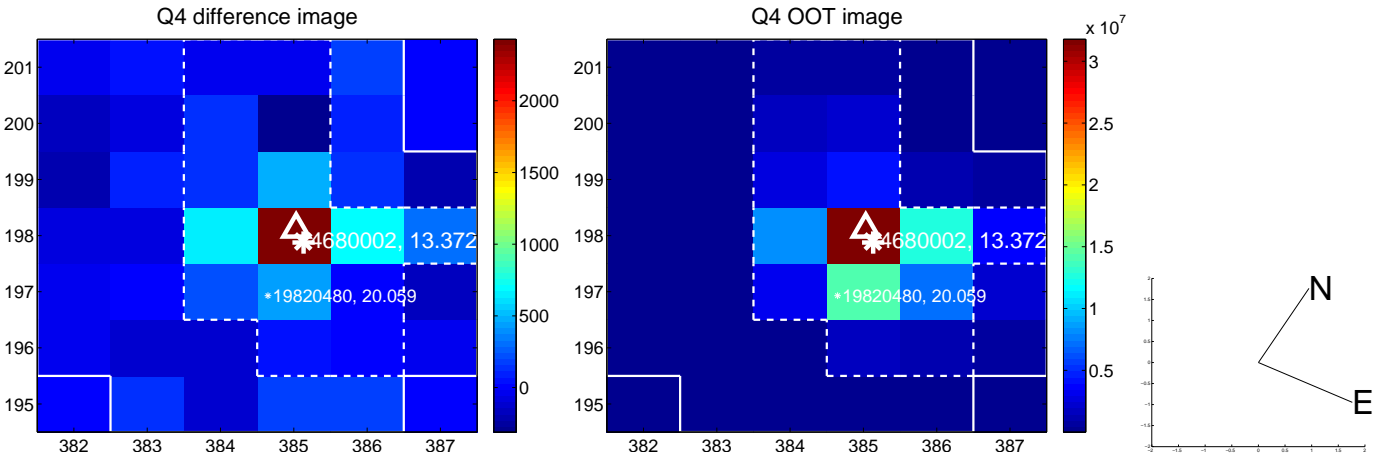
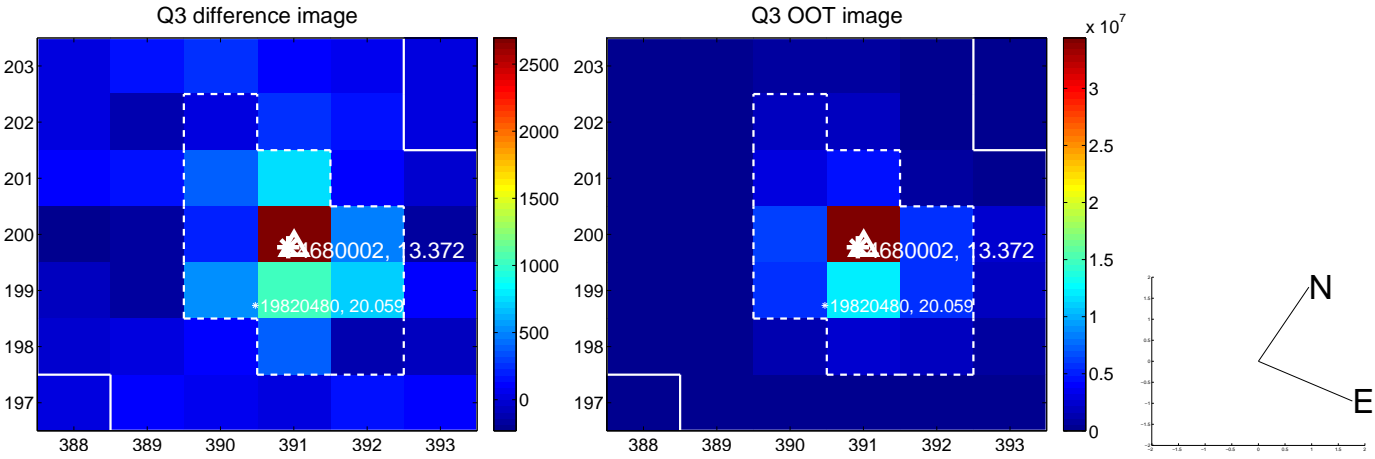
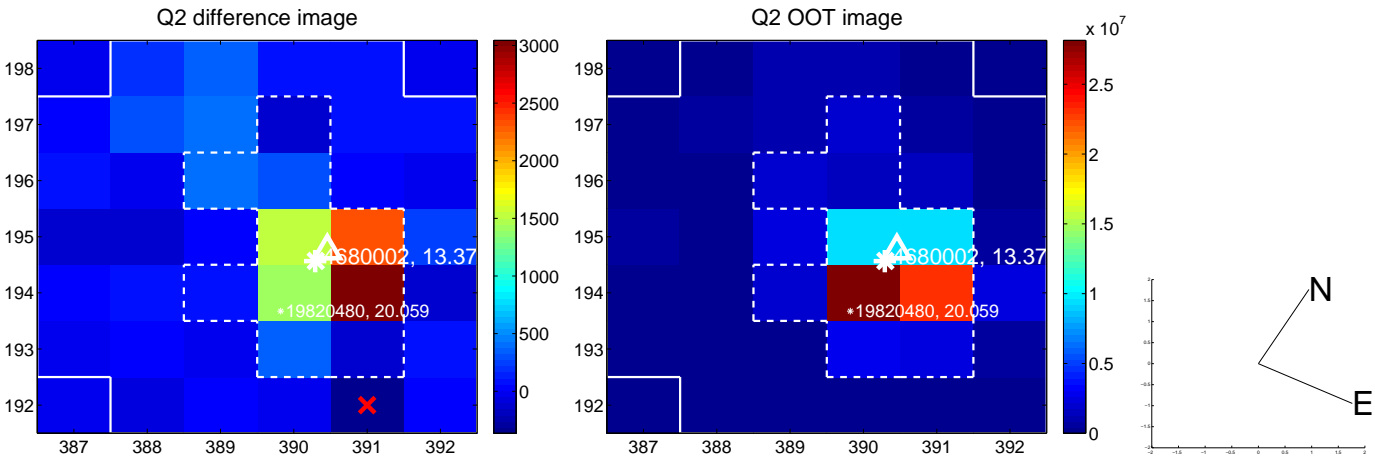
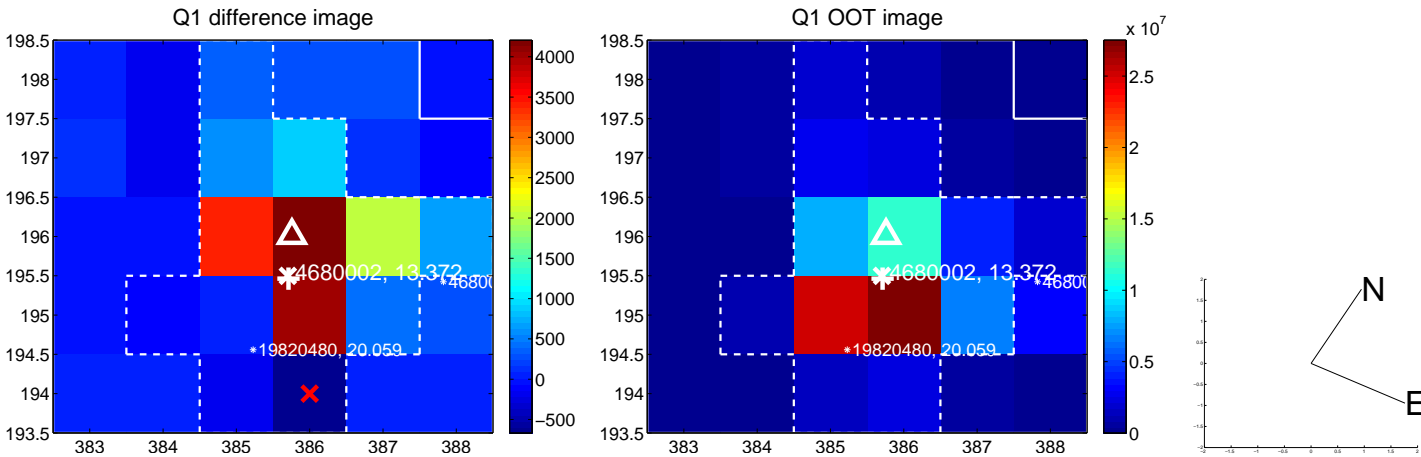
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.422 ± 0.212	1.99	-0.078 ± 0.181	0.415 ± 0.193
PRF-fit source offset from KIC position	0.441 ± 0.207	2.13	-0.070 ± 0.187	0.436 ± 0.190
photometric centroid source offset	0.49 ± 0.36	1.37	-0.49 ± 0.36	0.05 ± 0.32

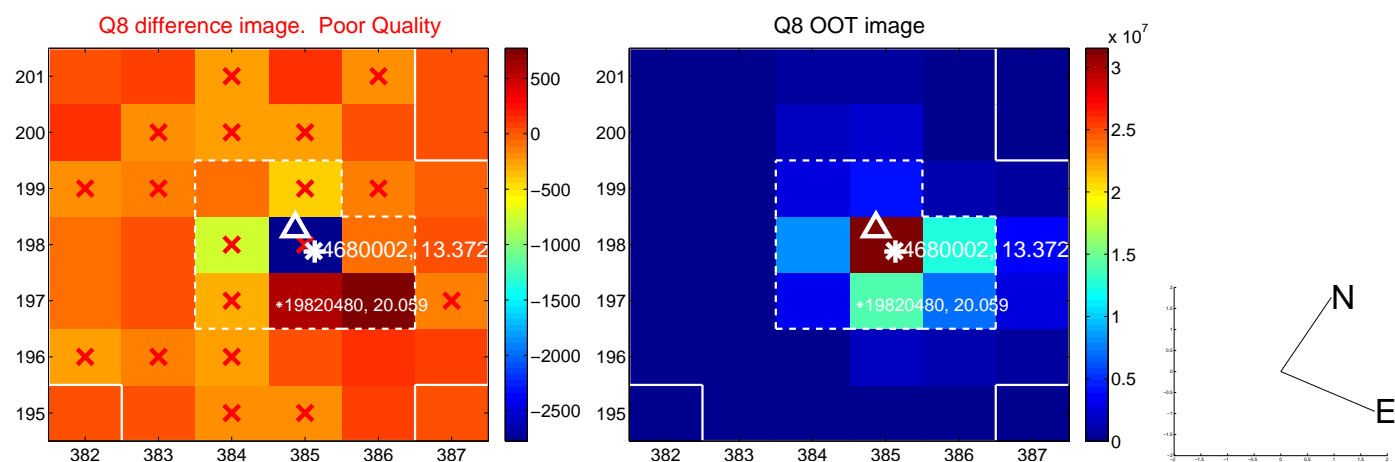
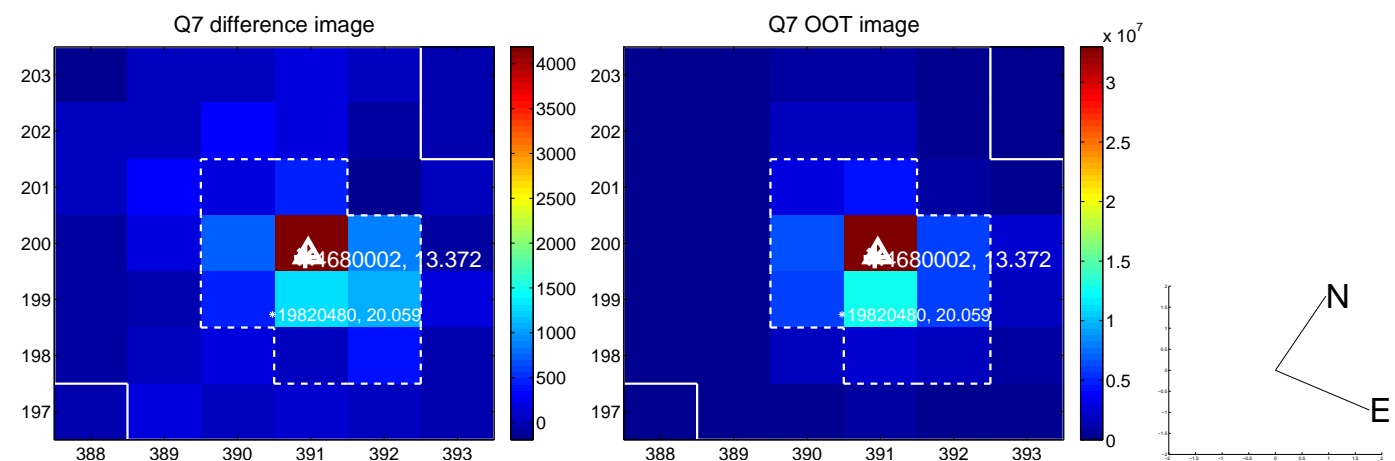
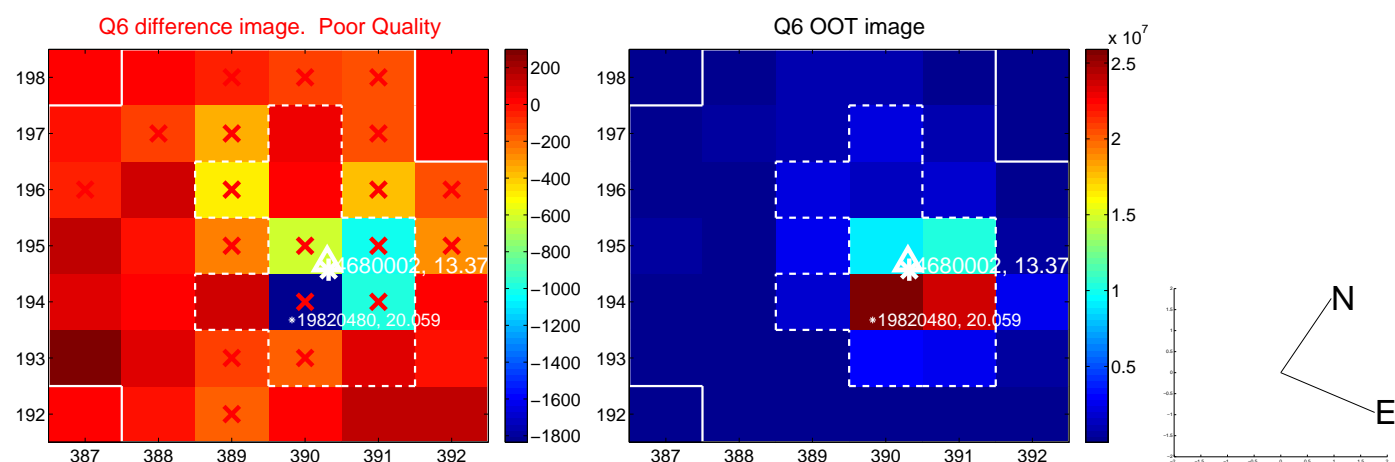
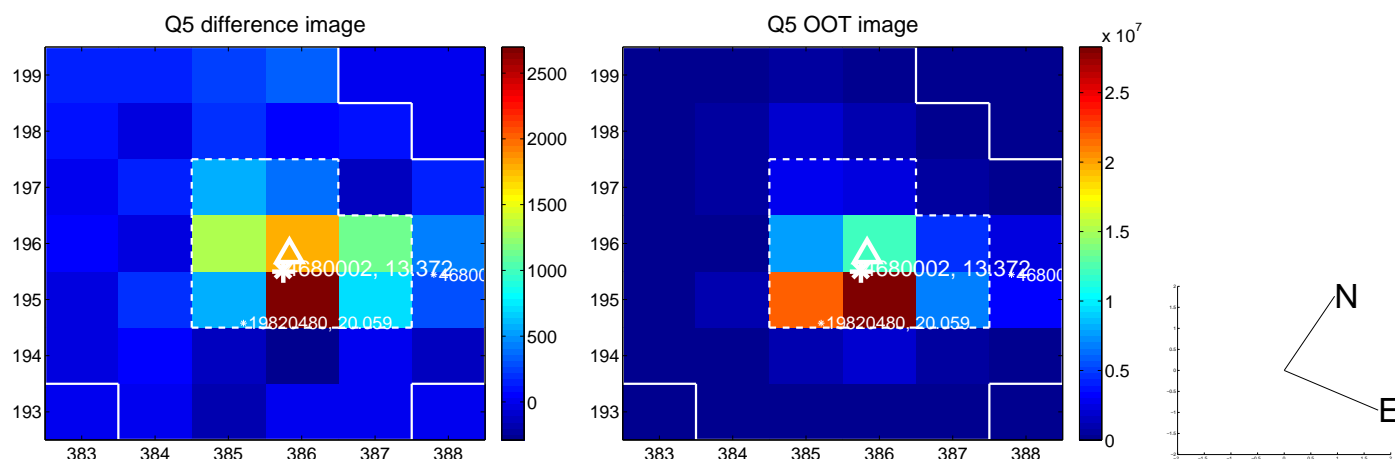


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

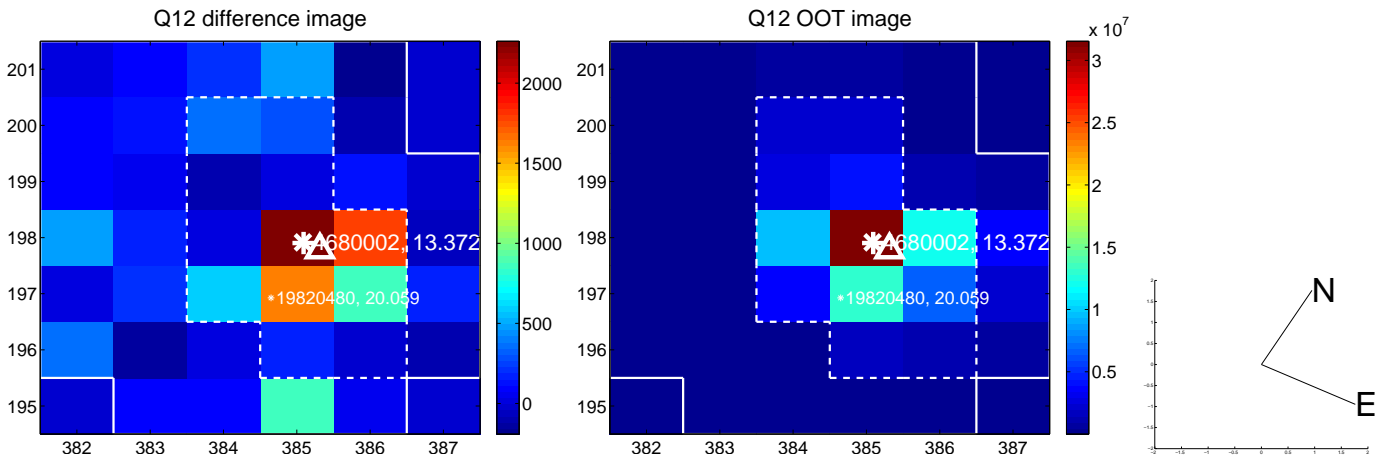
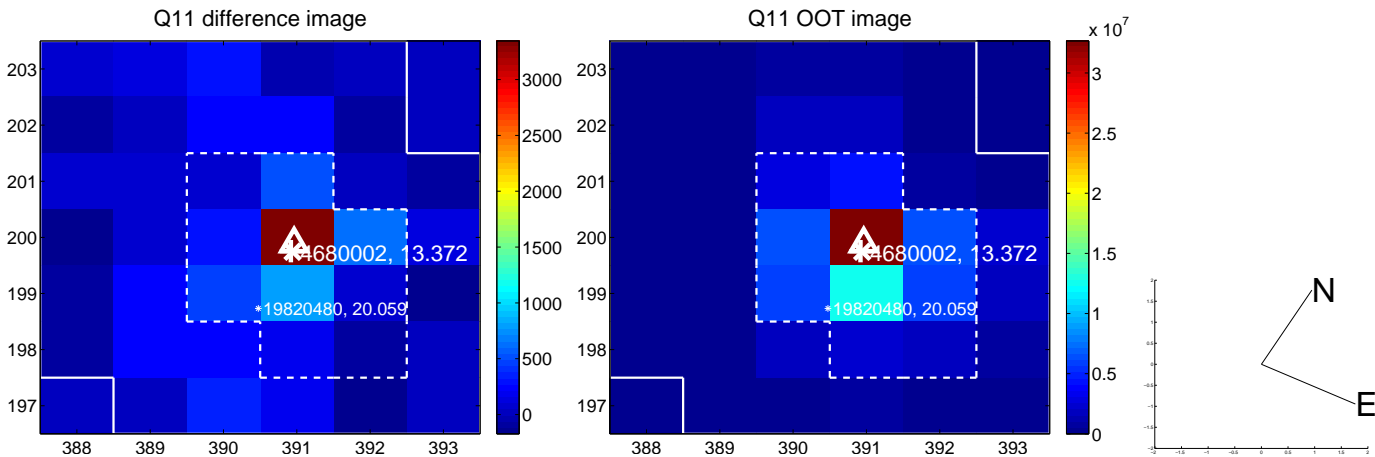
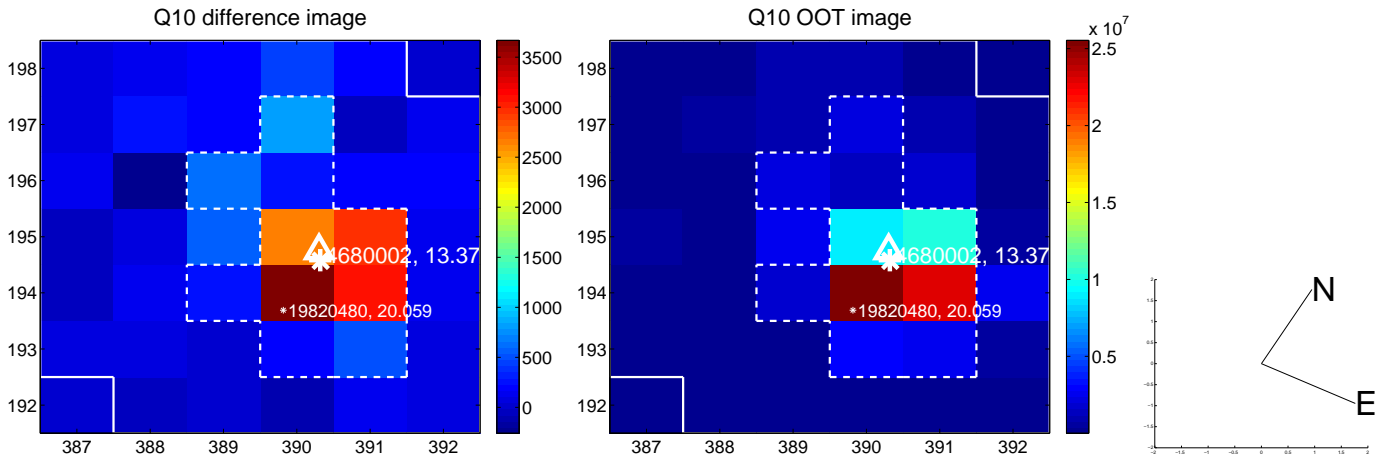
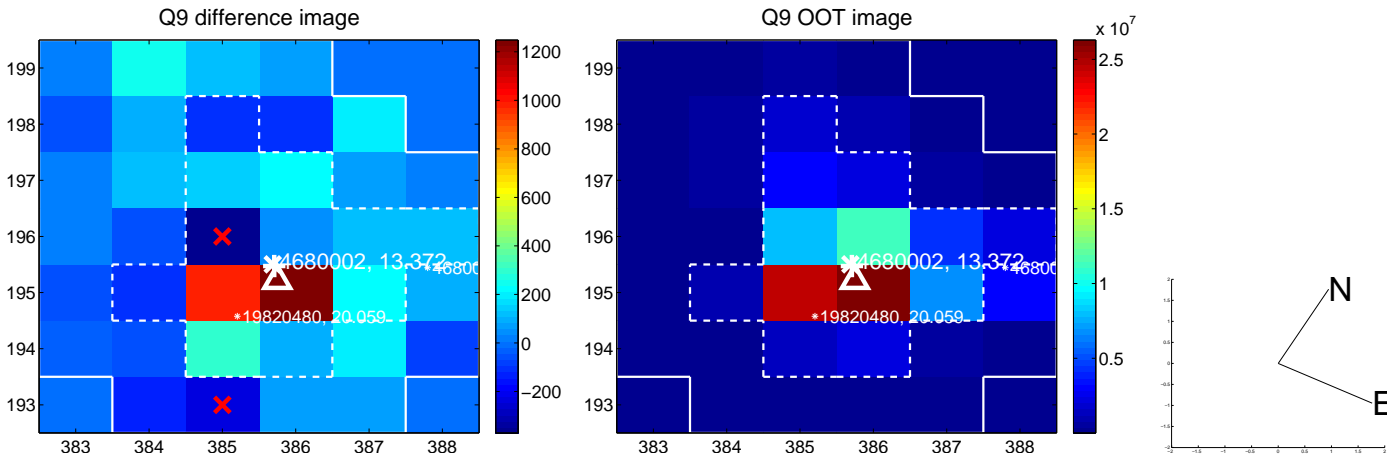
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



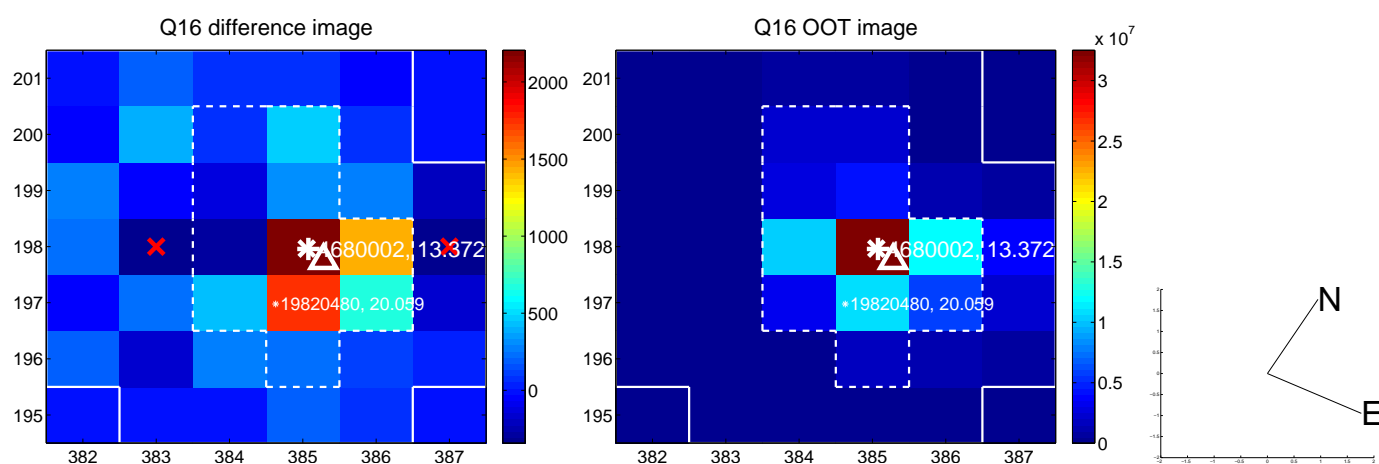
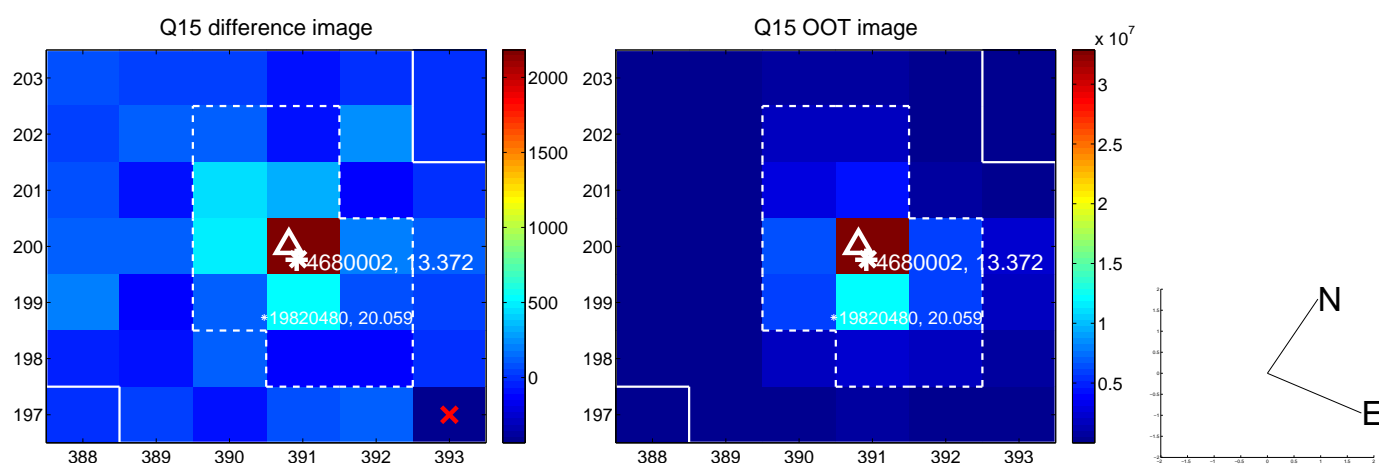
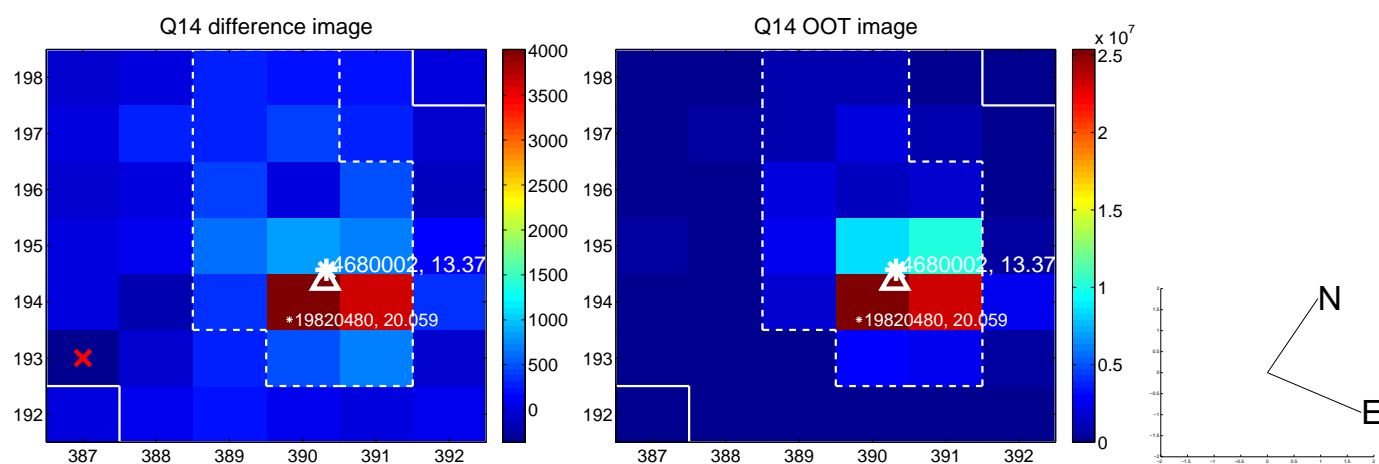
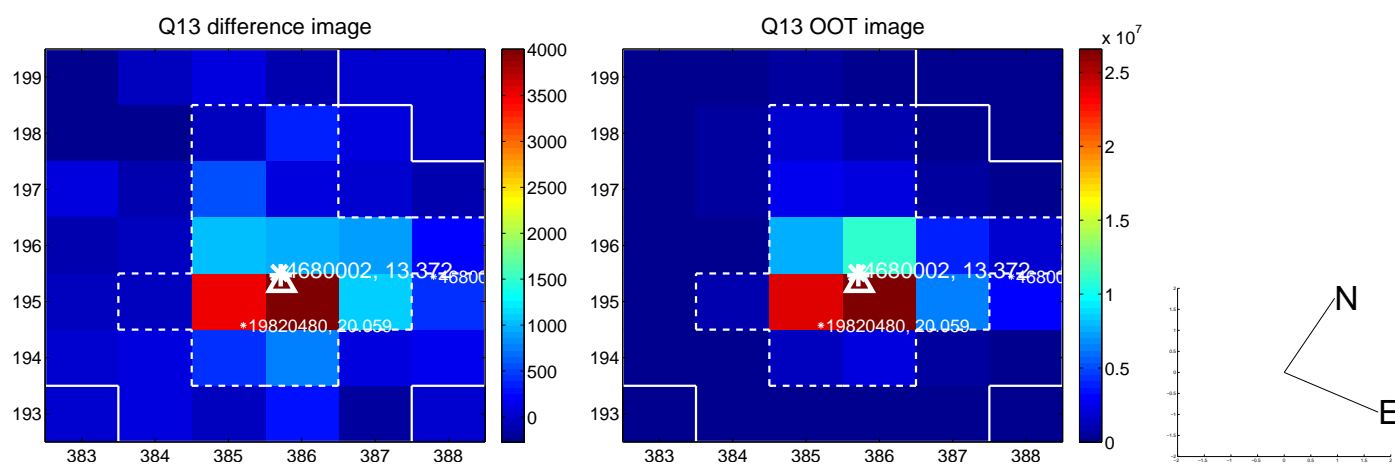
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



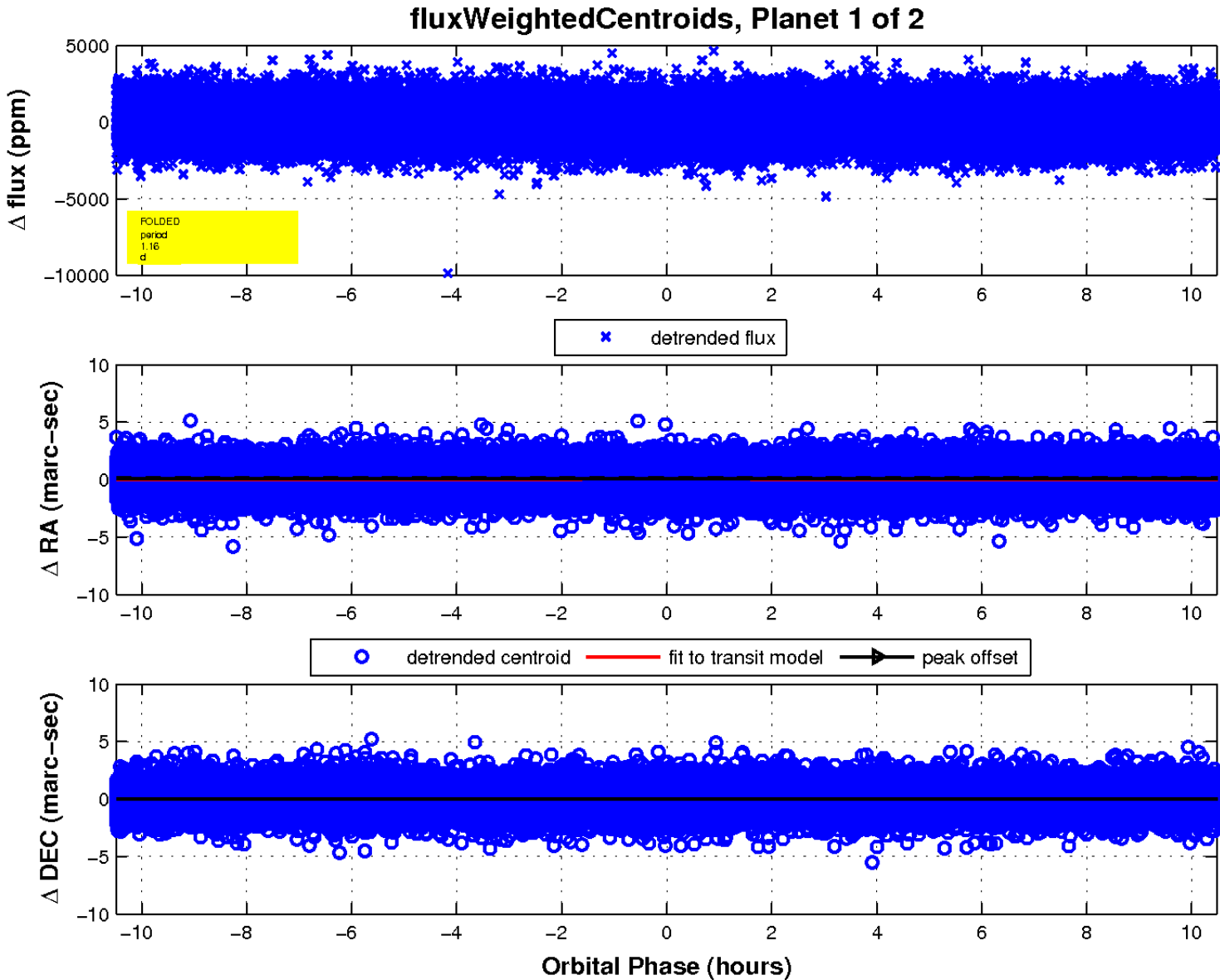
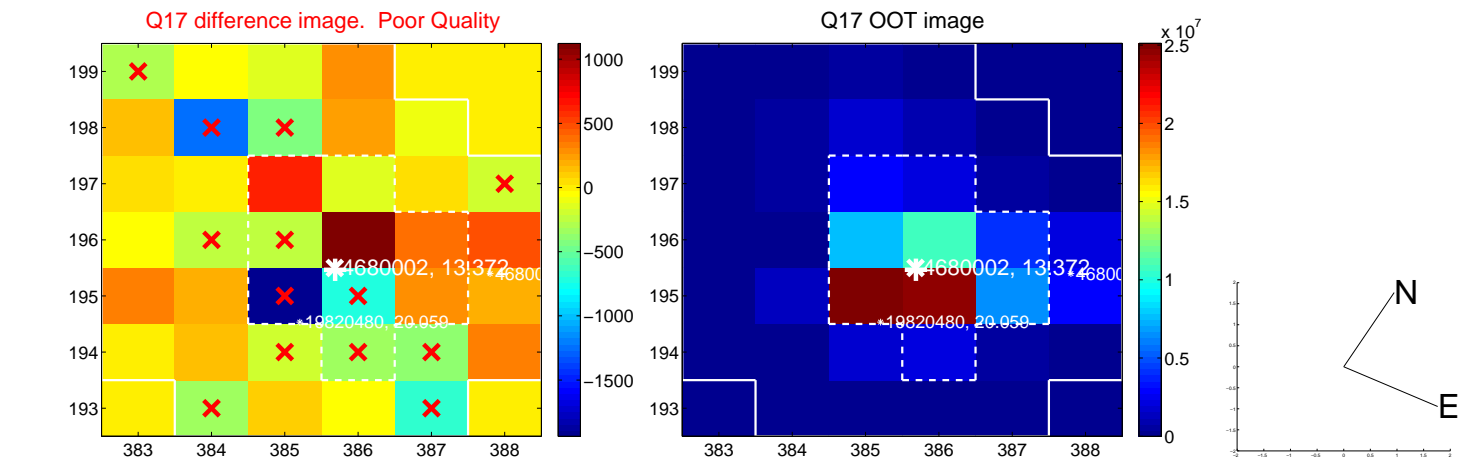
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

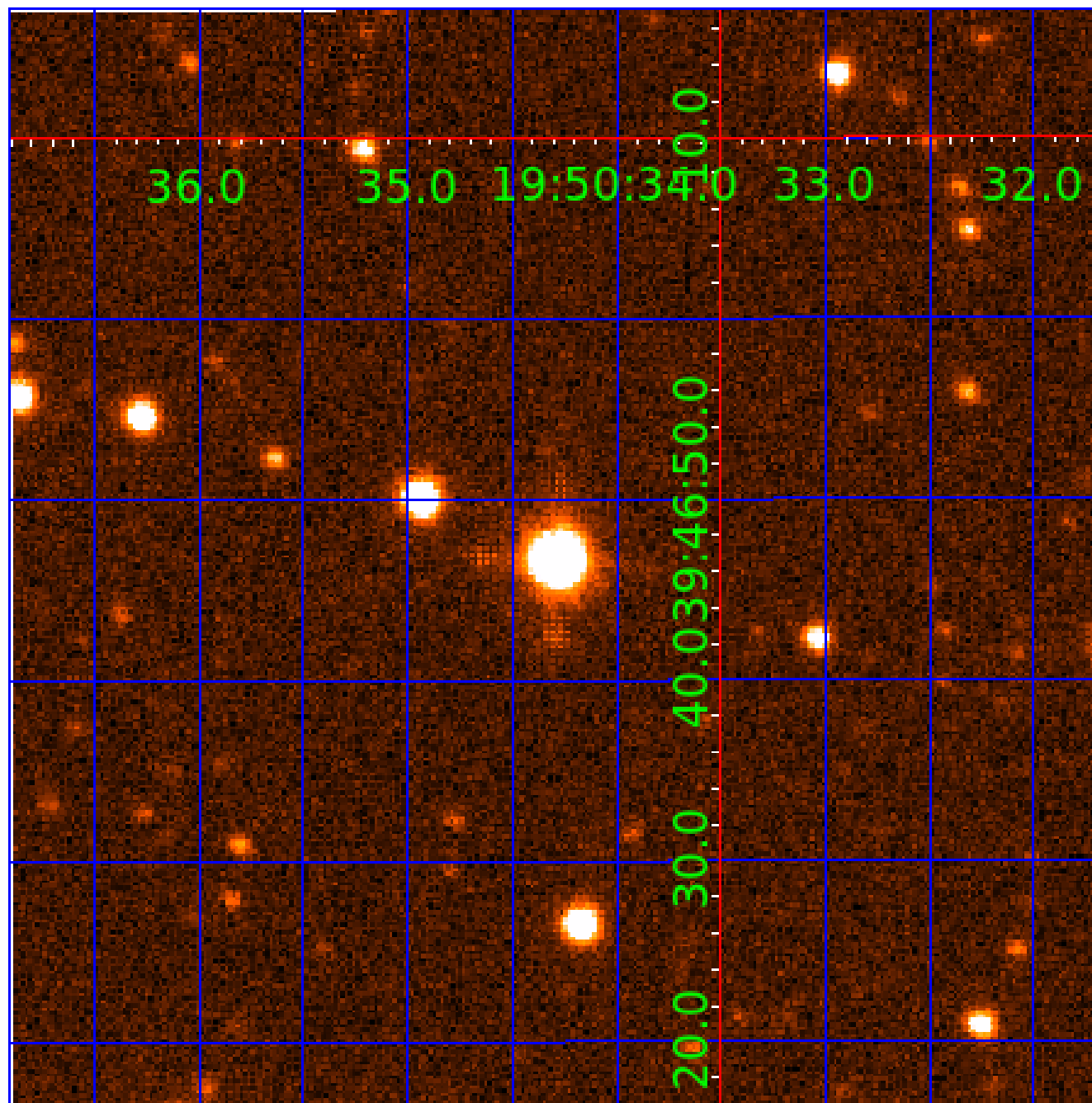


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004680002

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004680002-01	OBS	No	1.157097	132.336159	97.1	3.495	11.1	9.1	4.30	7192	4.99	60179.07
004680002-02	OBS	No	0.578554	132.050659	85.4	3.520	8.0	10.1	4.30	7192	4.67	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004680002-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004680002-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

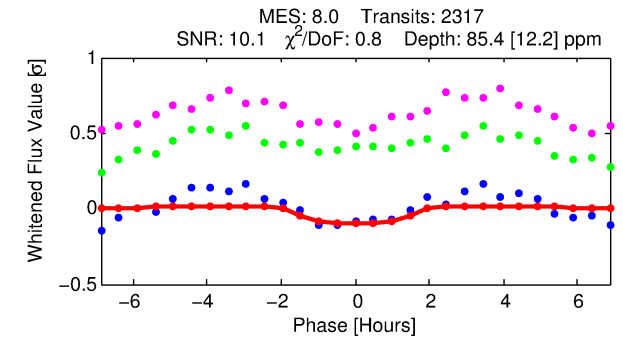
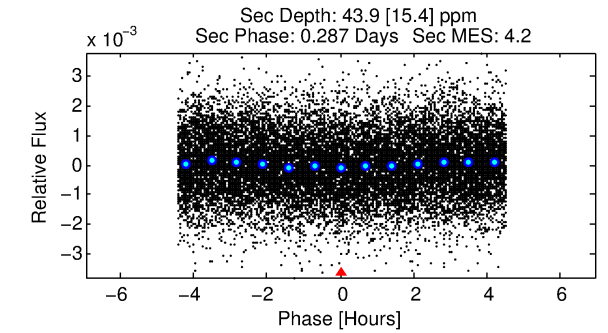
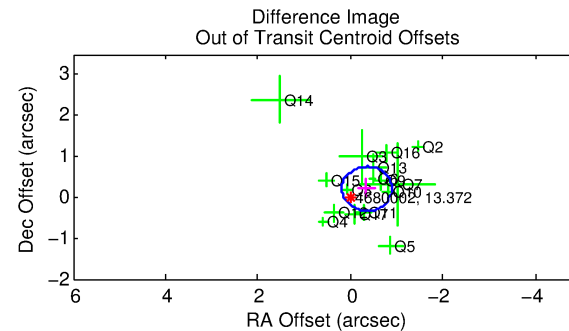
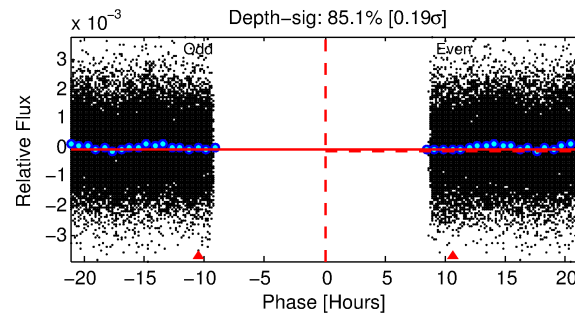
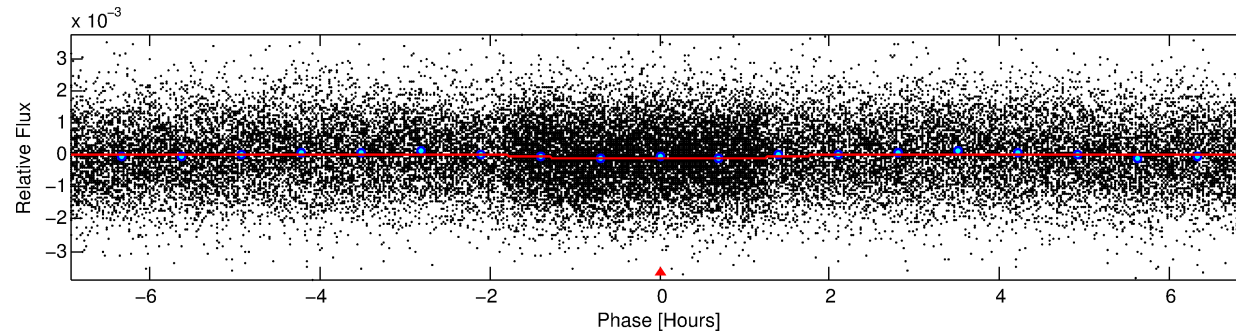
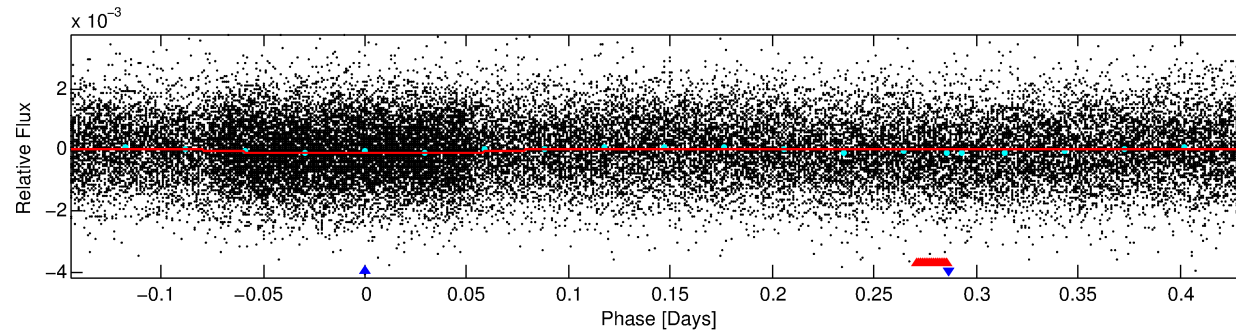
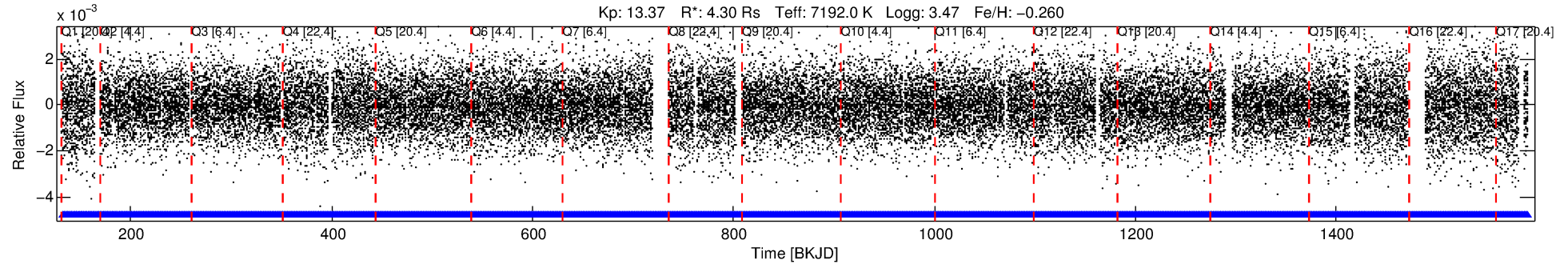
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004680002-02

No Significant Match Found

DV One-Page Summary

KIC: 4680002 Candidate: 2 of 2 Period: 0.579 d



DV Fit Results:

Period = 0.57855 [0.00001] d
Epoch = 132.0507 [0.0049] BKJD
Rp/R* = 0.0100 [0.0080]
a/R* = 1.10 [0.88]
b = 0.90 [0.96]
Seff = N/A
Teq = N/A
Rp = 4.67 [4.65] Re
a = N/A
Ag = N/A
Teffp = N/A

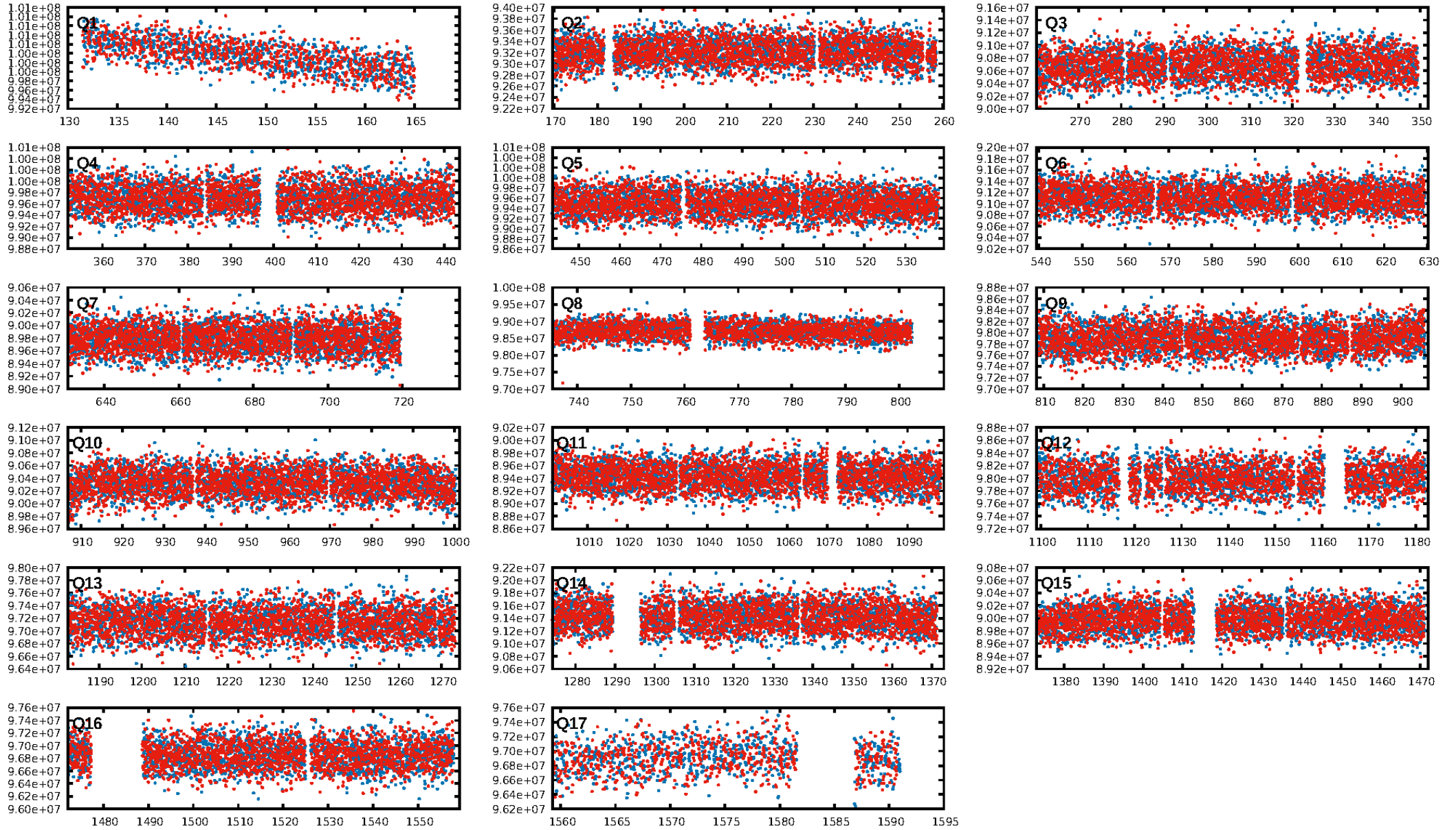
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.5% [2.80 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.54e-09
RollingBand-fgt: 1.00 [2212/2212]
GhostDiagnostic-chr: 1.621
Centroid-sig: 58.2%
Centroid-so: 0.226 arcsec [0.80 σ]
OotOffset-rm: 0.405 arcsec [2.25 σ]
KicOffset-rm: 0.392 arcsec [1.94 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.81 [13/16]
DiffImageOverlap-fno: 0.00 [0/17]

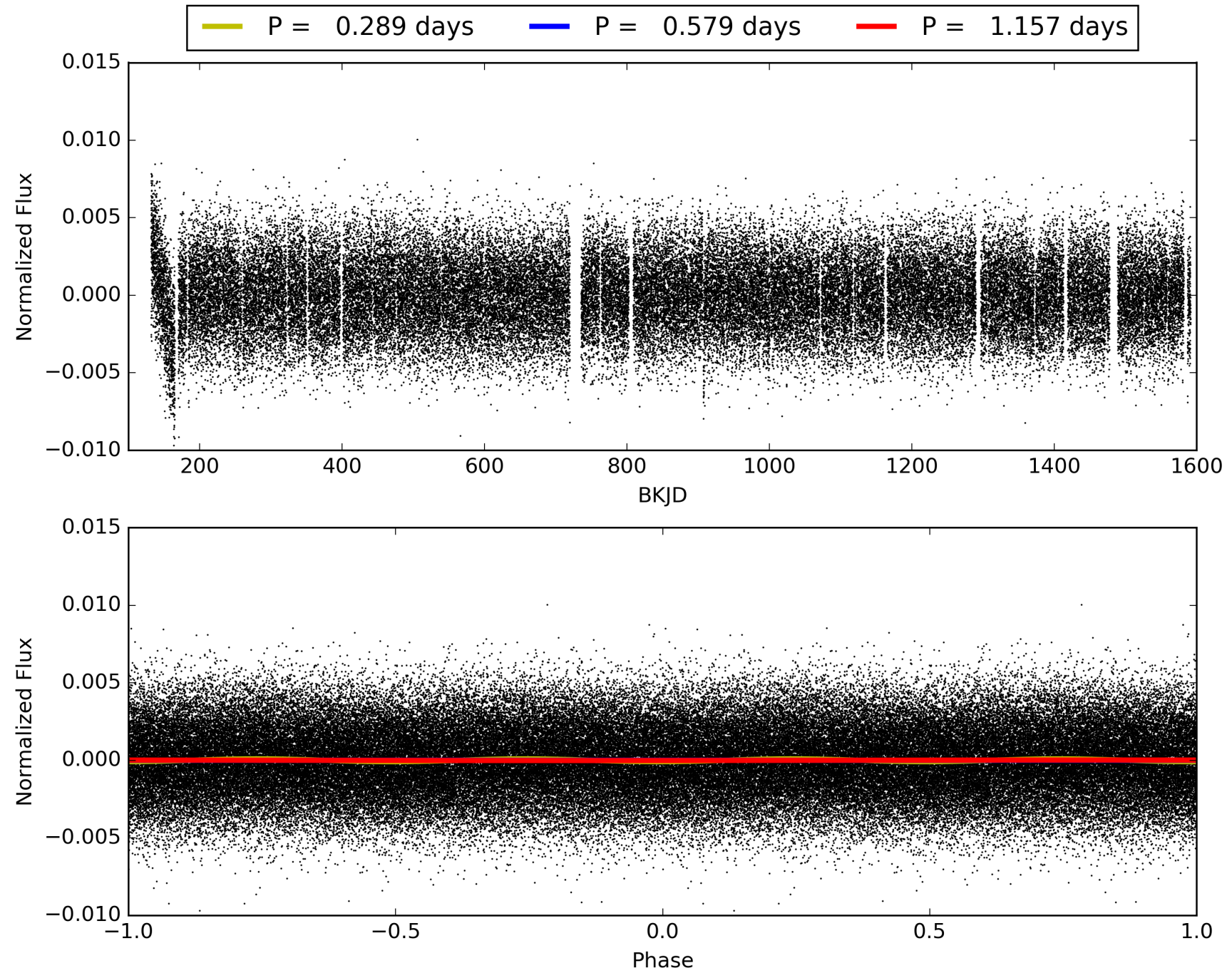
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:34:38 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004680002-02, PDC Light Curves

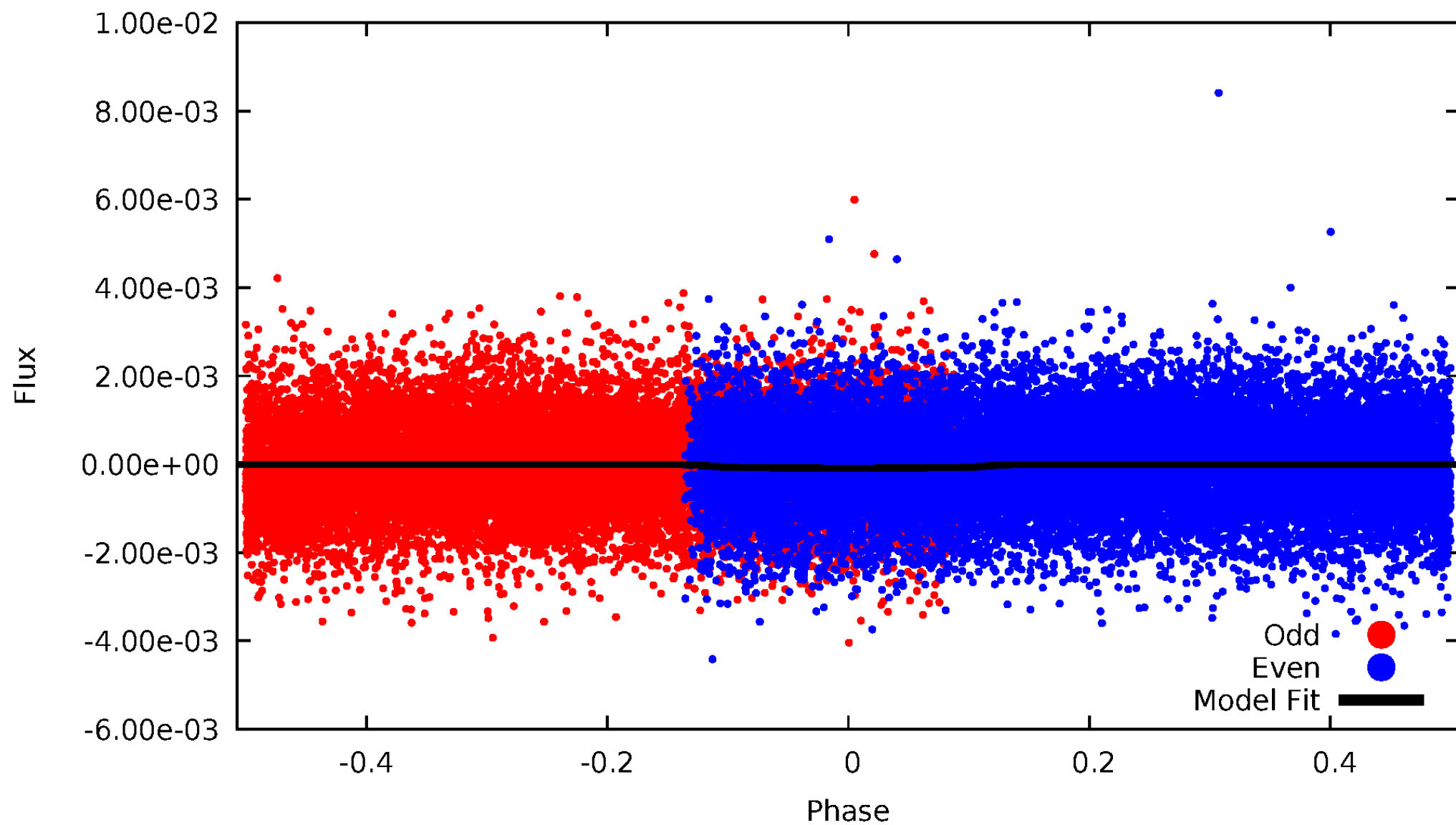


TCE 004680002-02



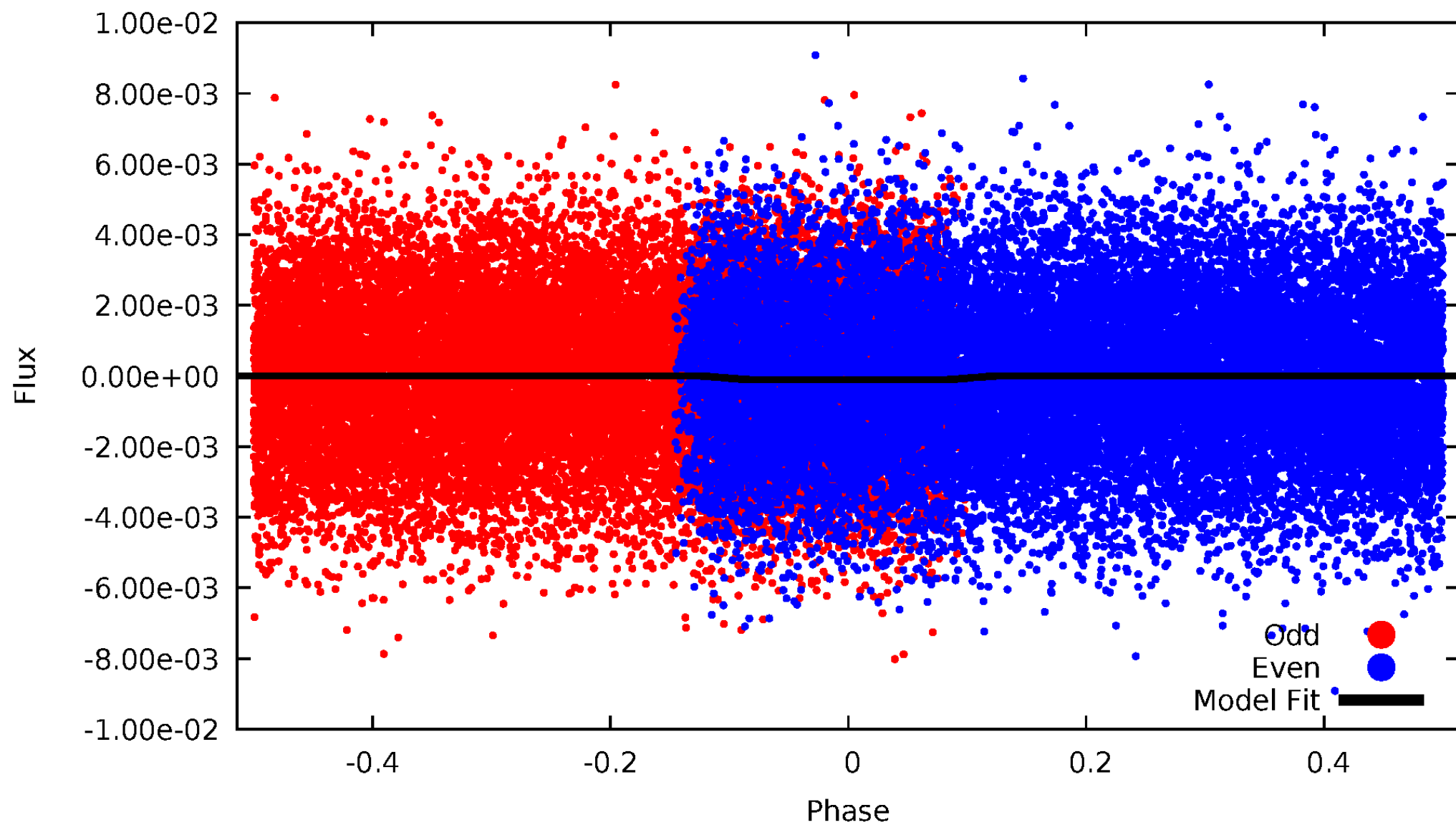
DV Odd/Even

TCE 004680002-02



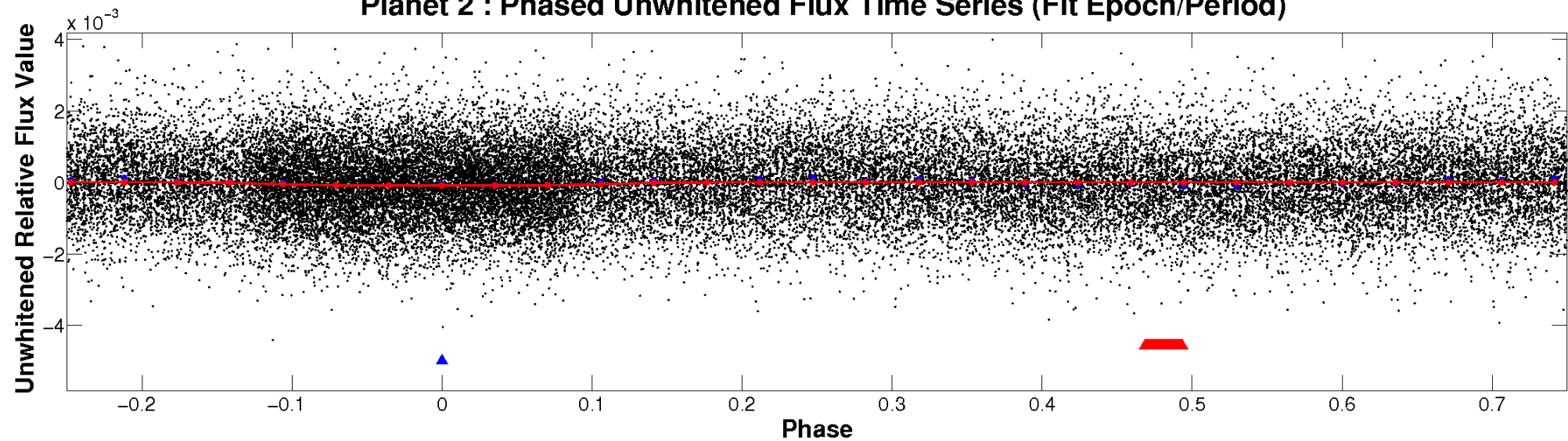
ALT Odd/Even

TCE 004680002-02

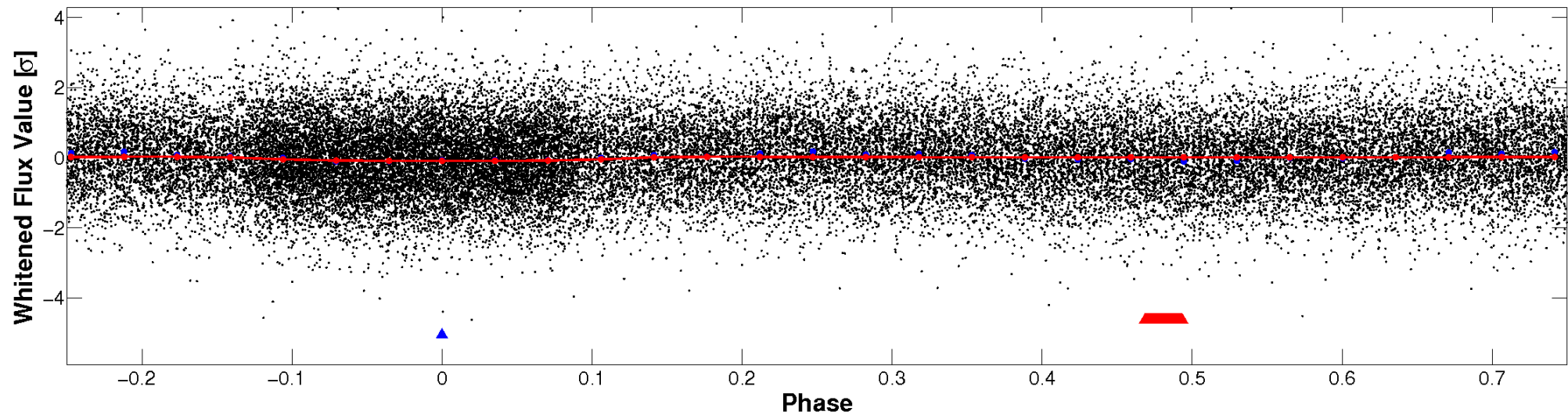


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

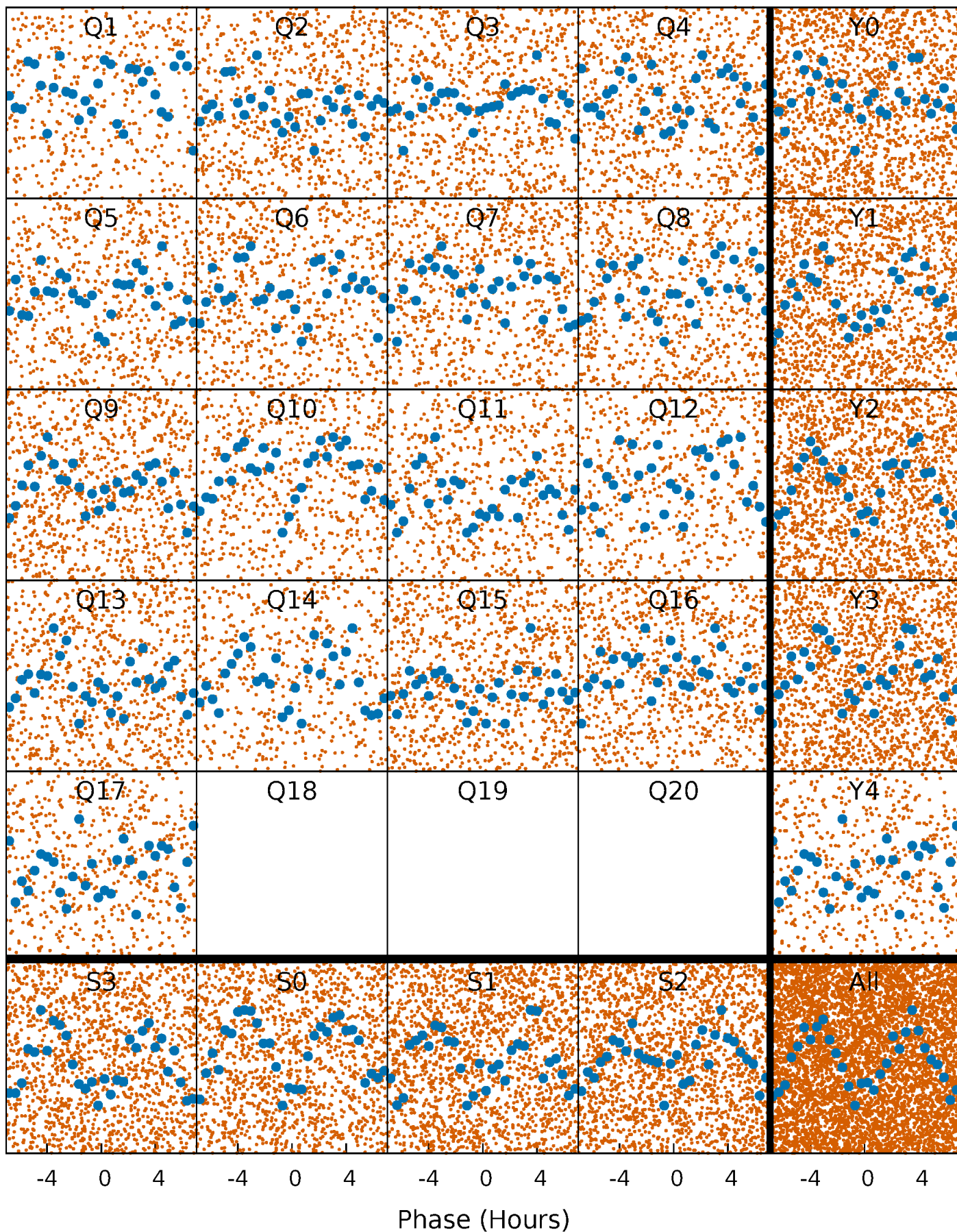


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



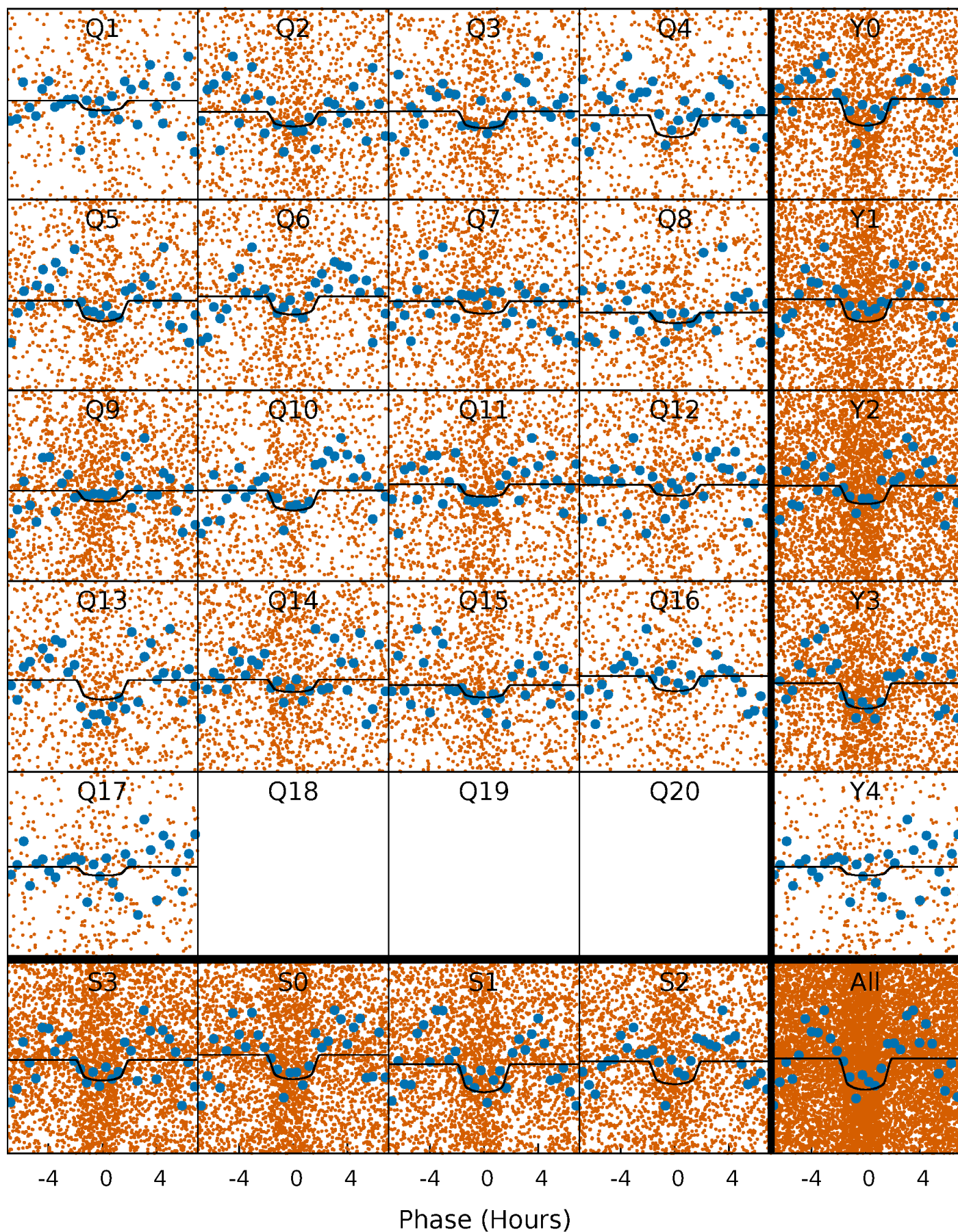
PDC Quarter-Phased Transit Curves

TCE 004680002-02 P= 0.578554 Days $T_0=132.050659$ (BKJD)



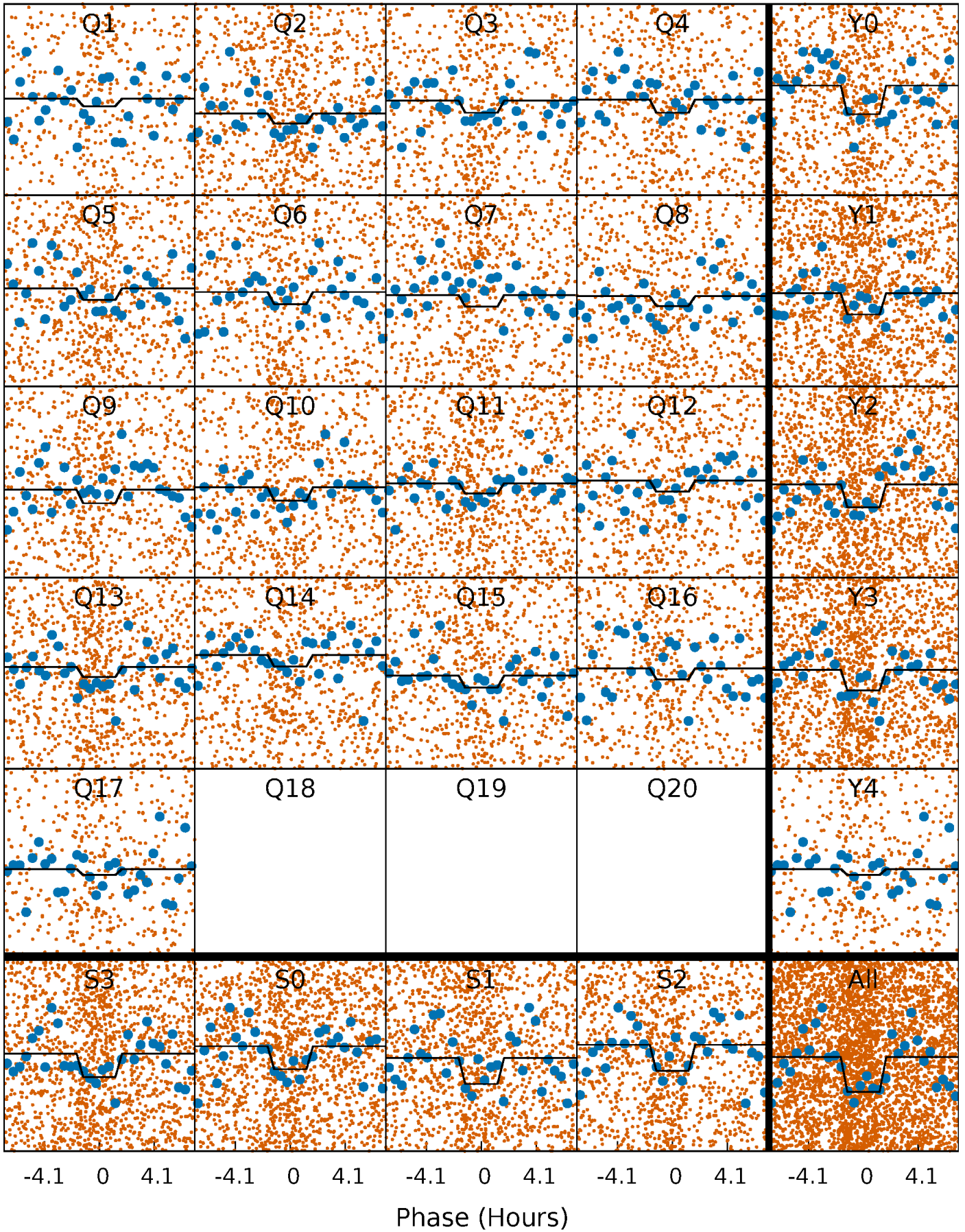
DV Quarter-Phased Transit Curves

TCE 004680002-02 P= 0.578554 Days $T_0=132.050659$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

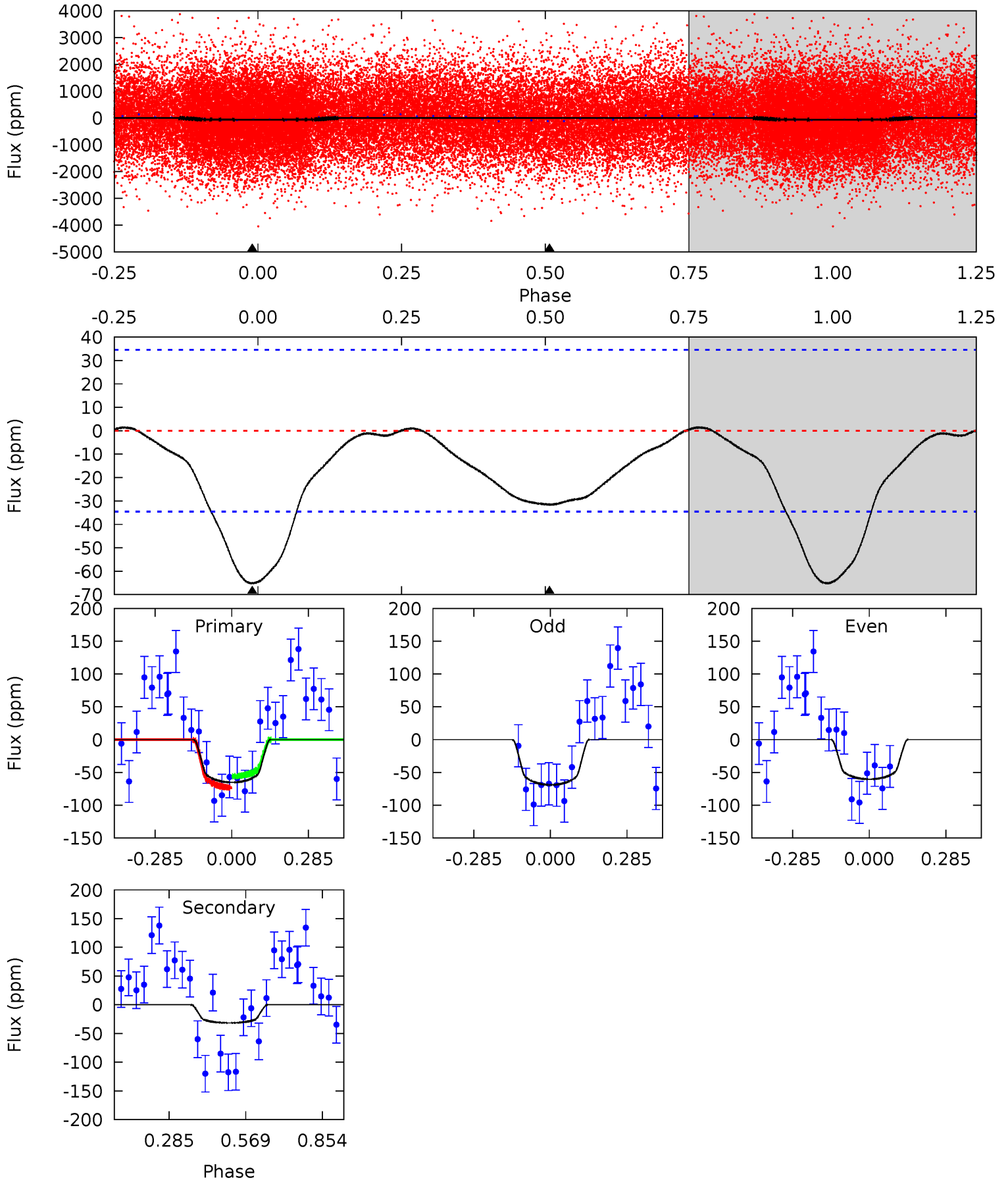
TCE 004680002-02 P= 0.578557 Days $T_0=132.050694$ (BKJD)



DV Model-Shift Uniqueness Test

004680002-02, P = 0.578554 Days, E = 131.472105 Days

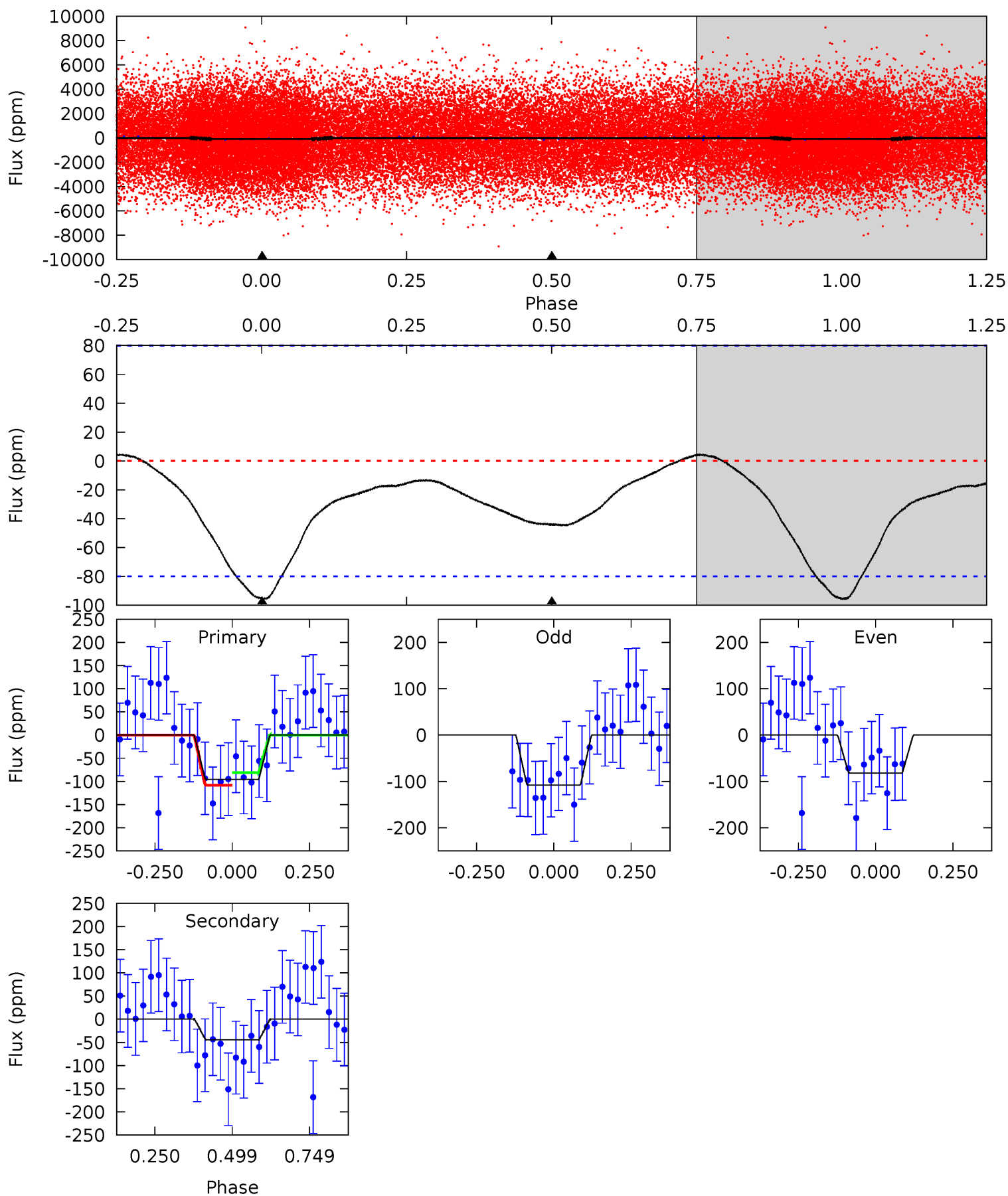
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.19	3.98	0	0	4.34	1.07	0.15	8.19	8.19	3.98	3.98	0.55	1.07	0.02	1.11



Alt Model-Shift Uniqueness Test

004680002-02, P = 0.578557 Days, E = 131.472137 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.23	2.43	0	0	4.37	1.15	0.51	5.23	5.23	2.43	2.43	0.70	0.86	0.04	0.74



Stellar Parameters For KIC 004680002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7192^{+285}_{-392}	$3.470^{+0.621}_{-0.073}$	$-0.260^{+0.300}_{-0.300}$	$4.300^{+0.449}_{-2.546}$	$1.989^{+0.074}_{-0.668}$	$0.035^{+0.370}_{-0.008}$
	+4%/-5%	+18%/-2%	+115%/-115%	+10%/-59%	+4%/-34%	+1050%/-24%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004680002-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-32 ± 8	$4.22^{+3.74}_{-2.58}$	6659^{+629}_{-1030}	-3660^{+11226}_{-1573}	$0.253^{+1.544}_{-0.177}$
Alt.	-44 ± 18	$4.21^{+3.49}_{-2.42}$	6696^{+566}_{-1017}	4021^{+4174}_{-9103}	$0.374^{+1.612}_{-0.273}$

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

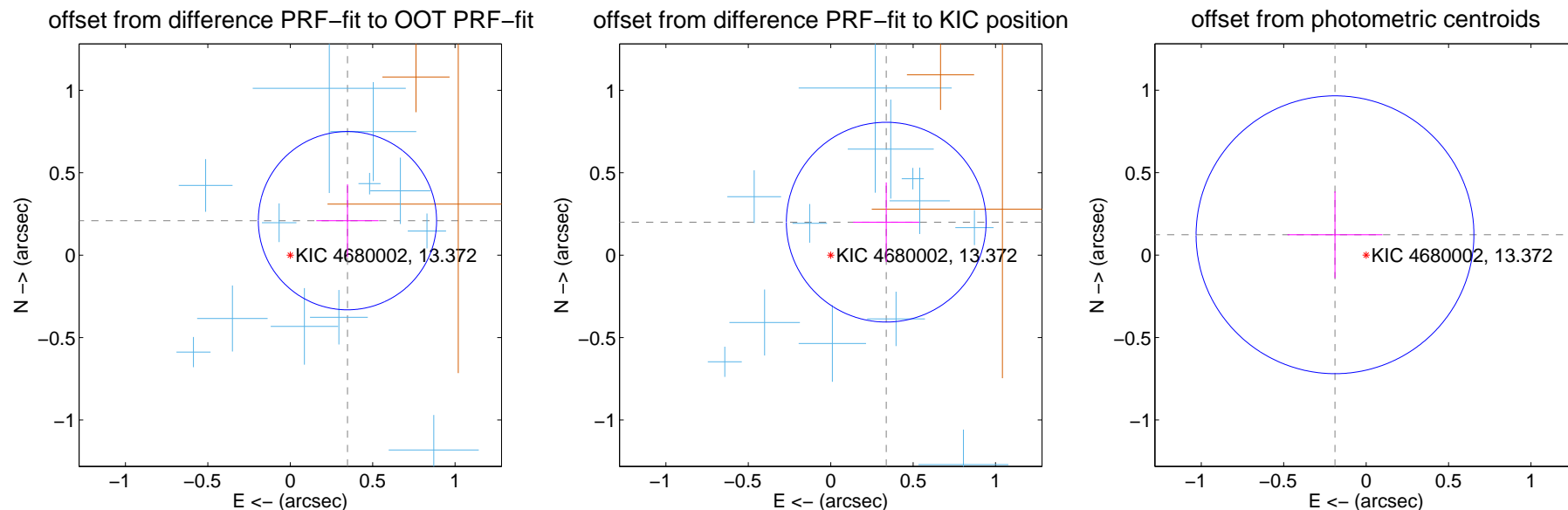
DV Centroid Data

Supplemental centroid analysis for 004680002-02. Kepler magnitude: 13.37. Transit SNR 10.14

There are 13 quarters with good PRF difference image offsets

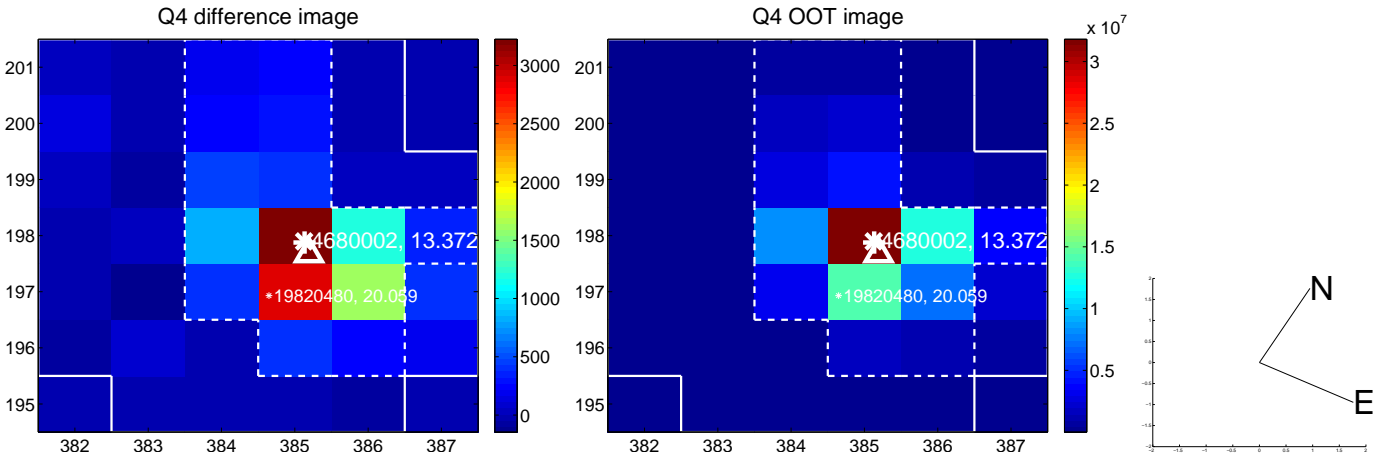
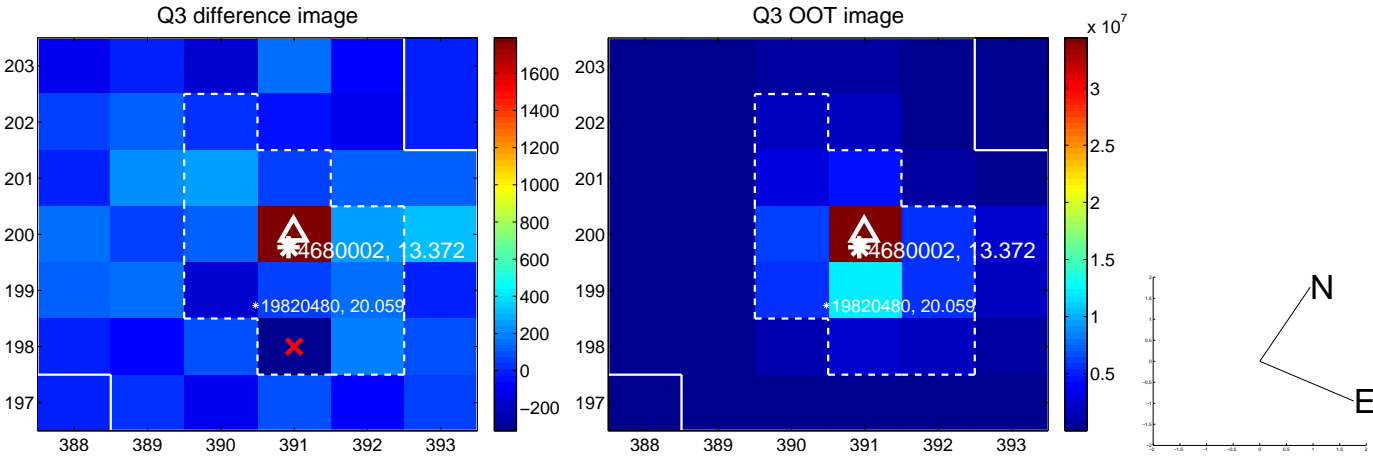
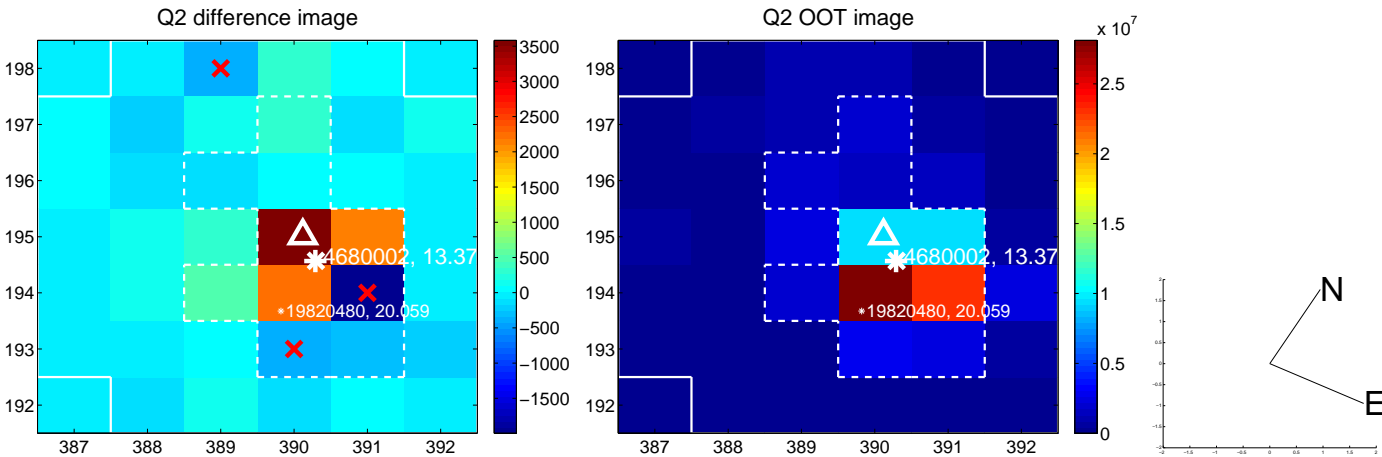
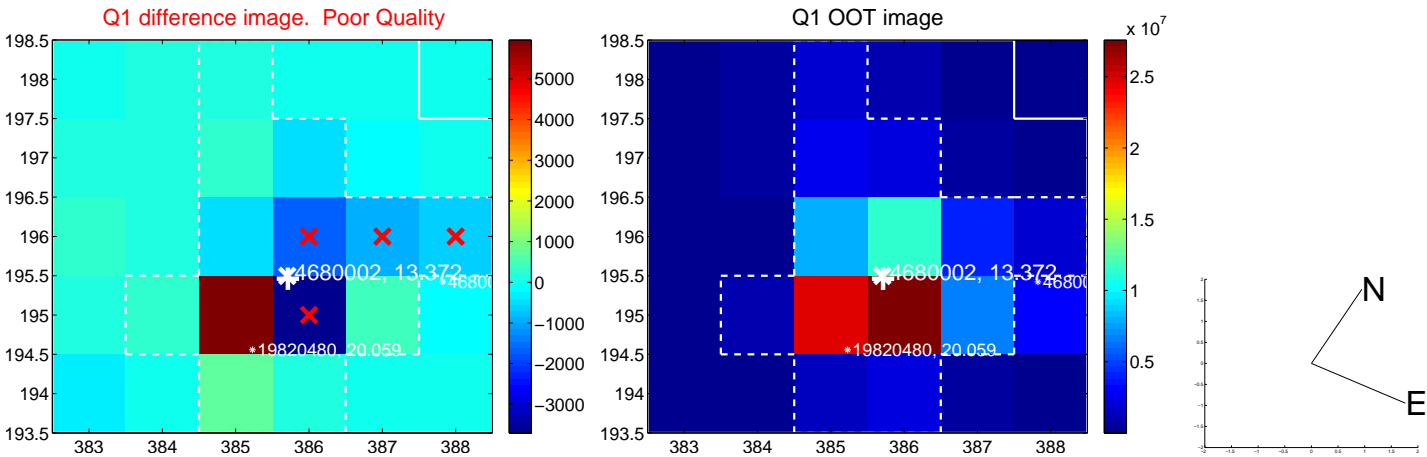
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.405 ± 0.180	2.25	-0.347 ± 0.189	0.209 ± 0.221
PRF-fit source offset from KIC position	0.392 ± 0.202	1.94	-0.337 ± 0.201	0.200 ± 0.241
photometric centroid source offset	0.23 ± 0.28	0.80	0.19 ± 0.29	0.12 ± 0.26

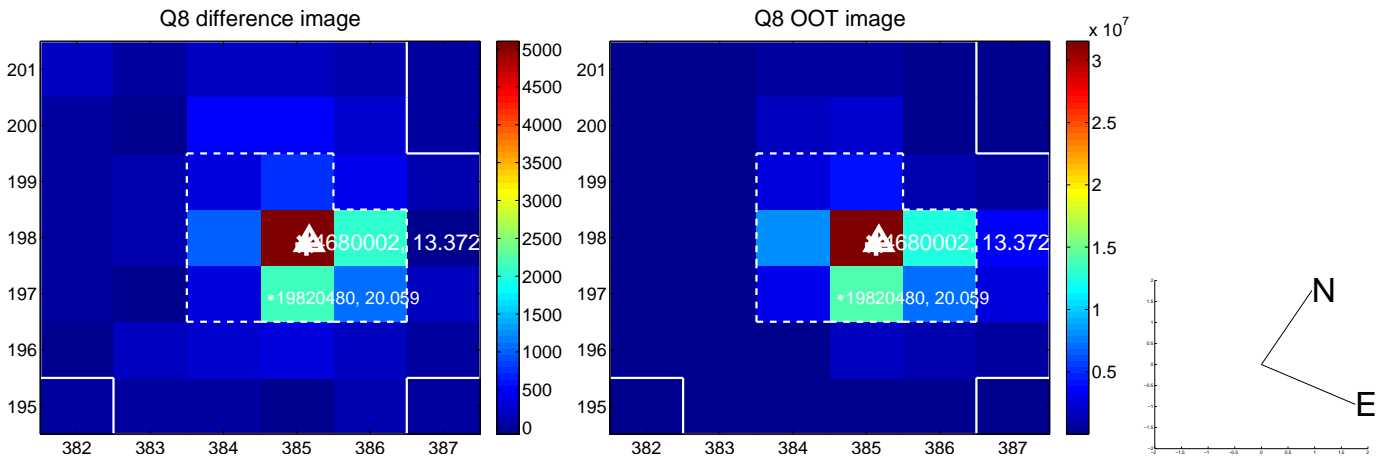
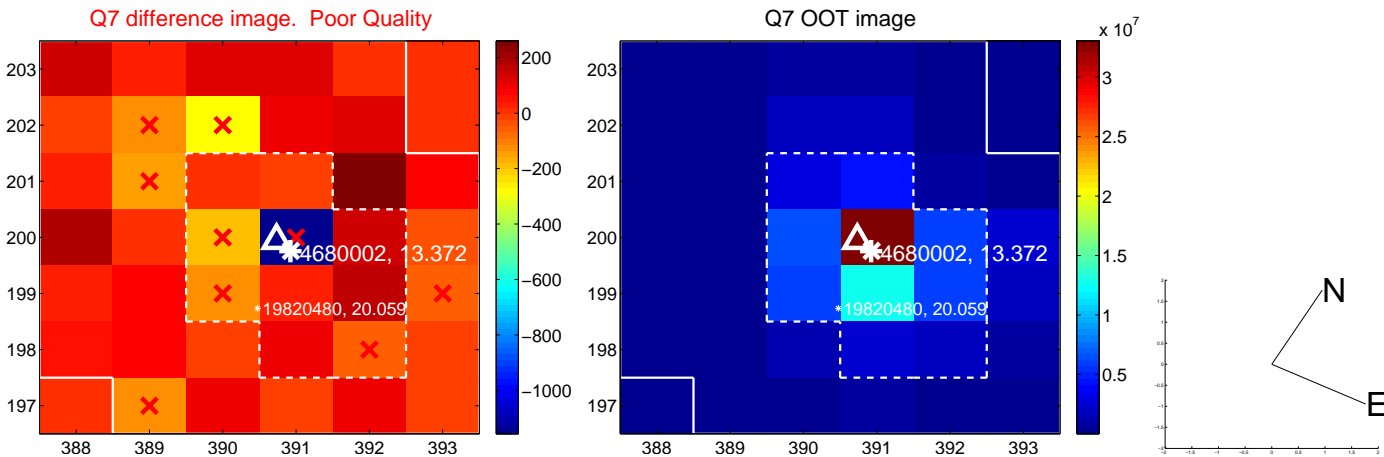
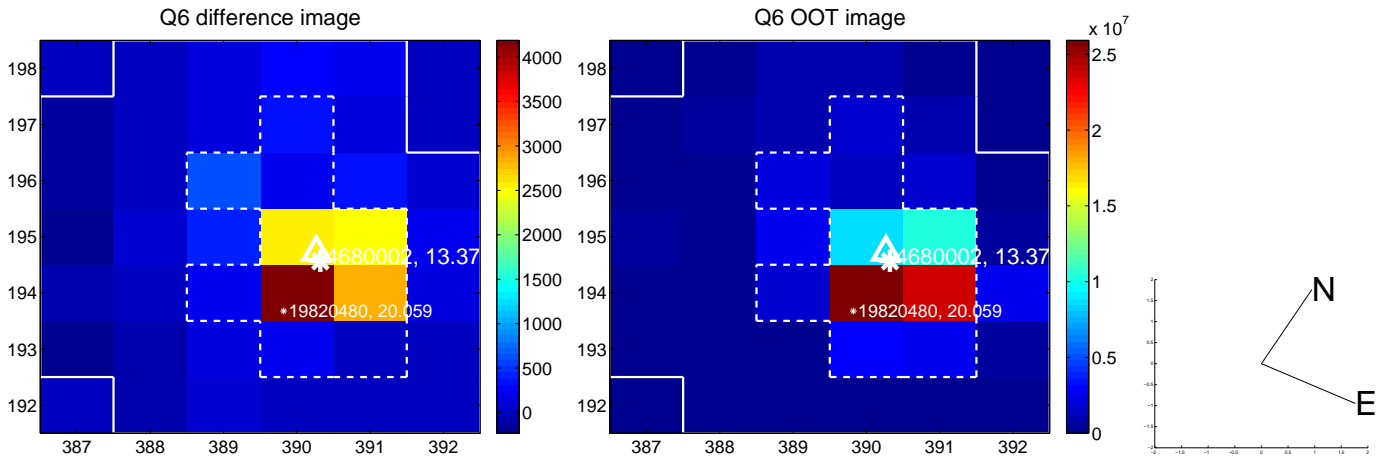
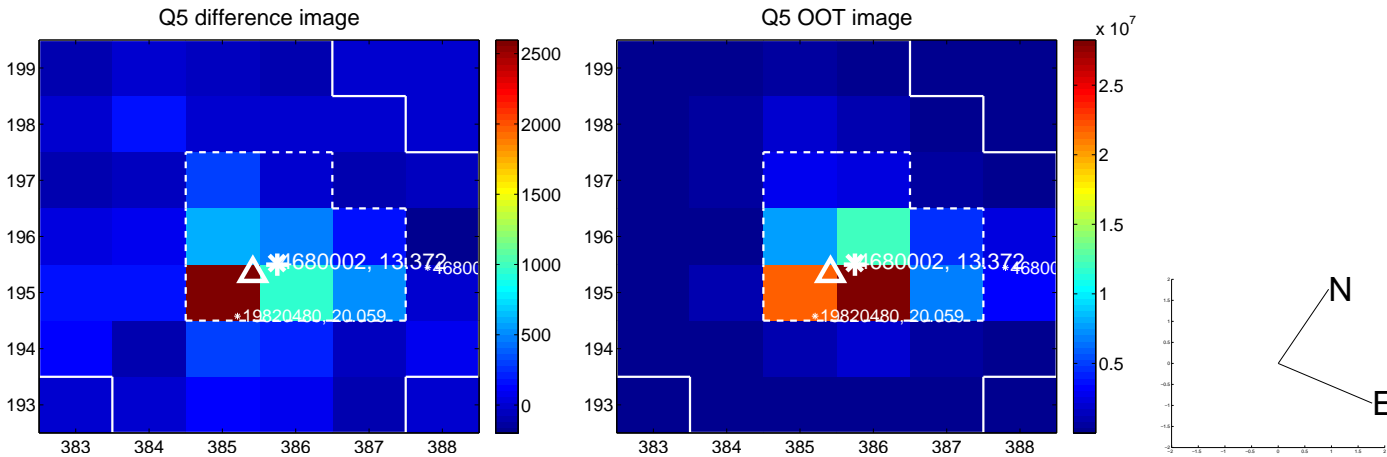


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

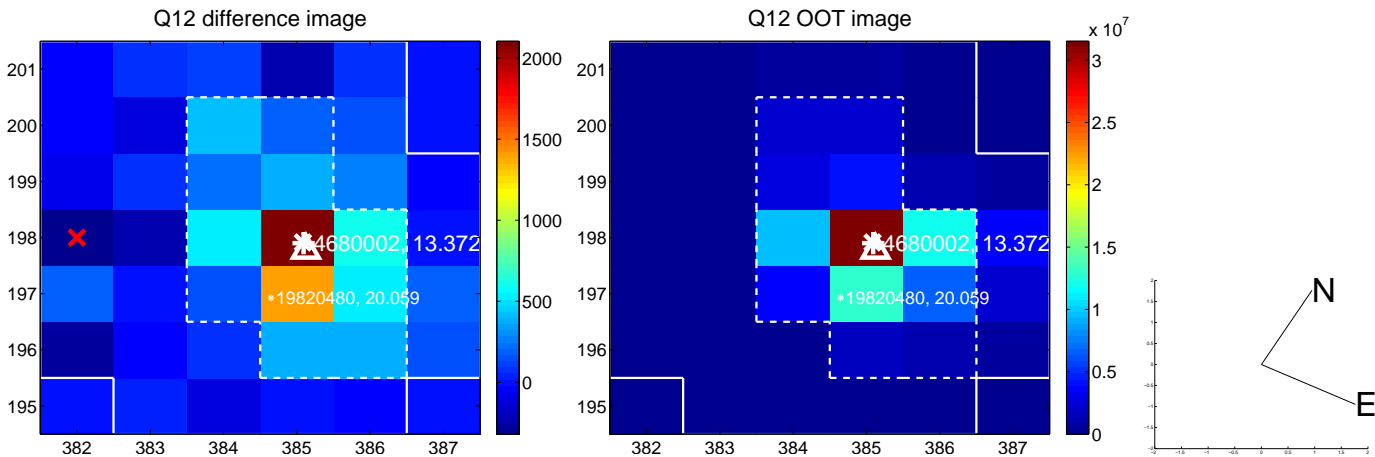
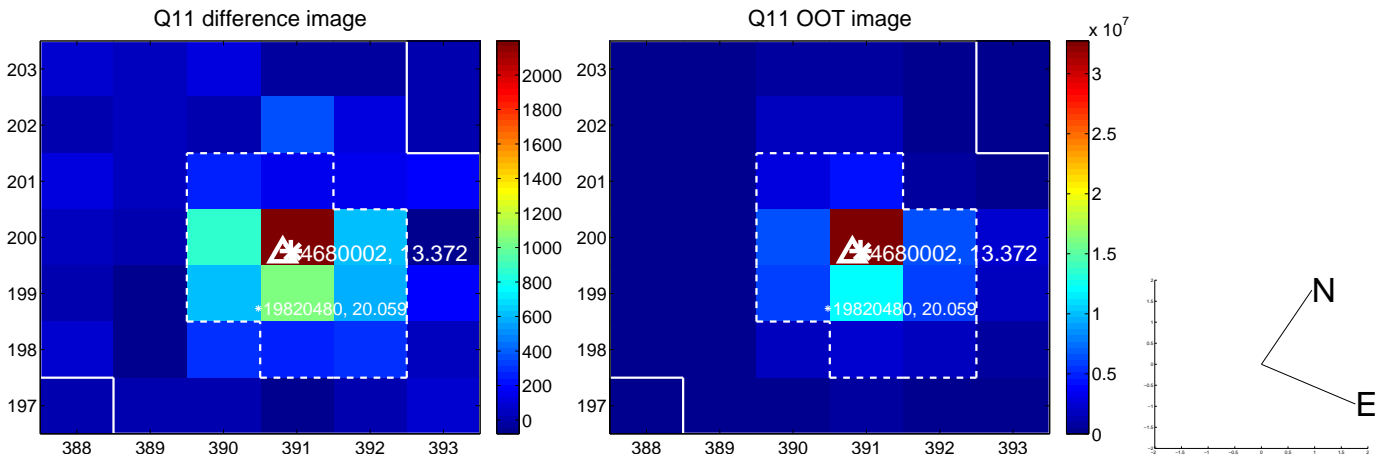
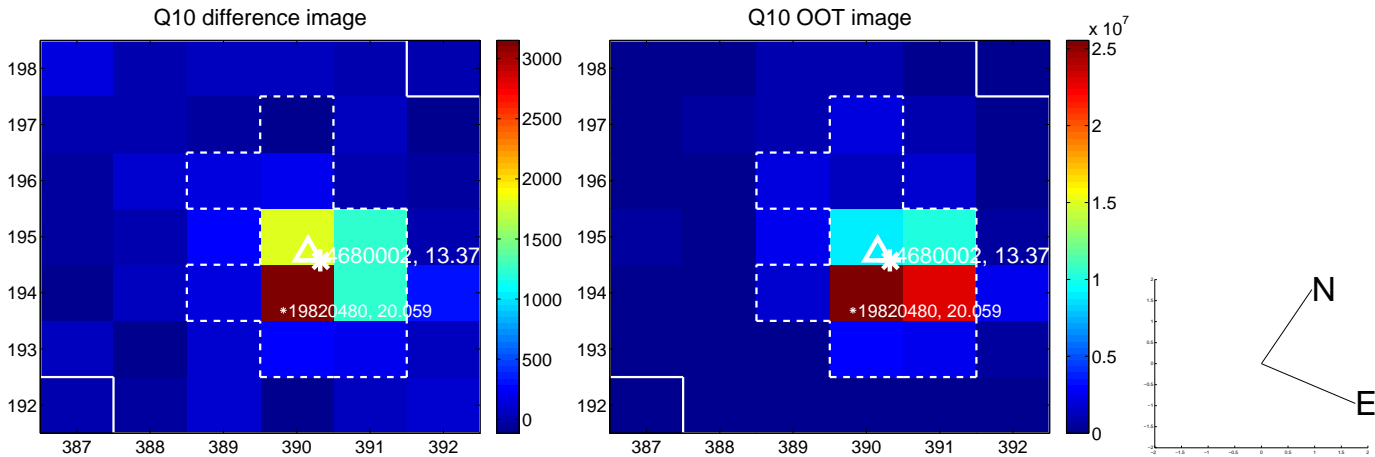
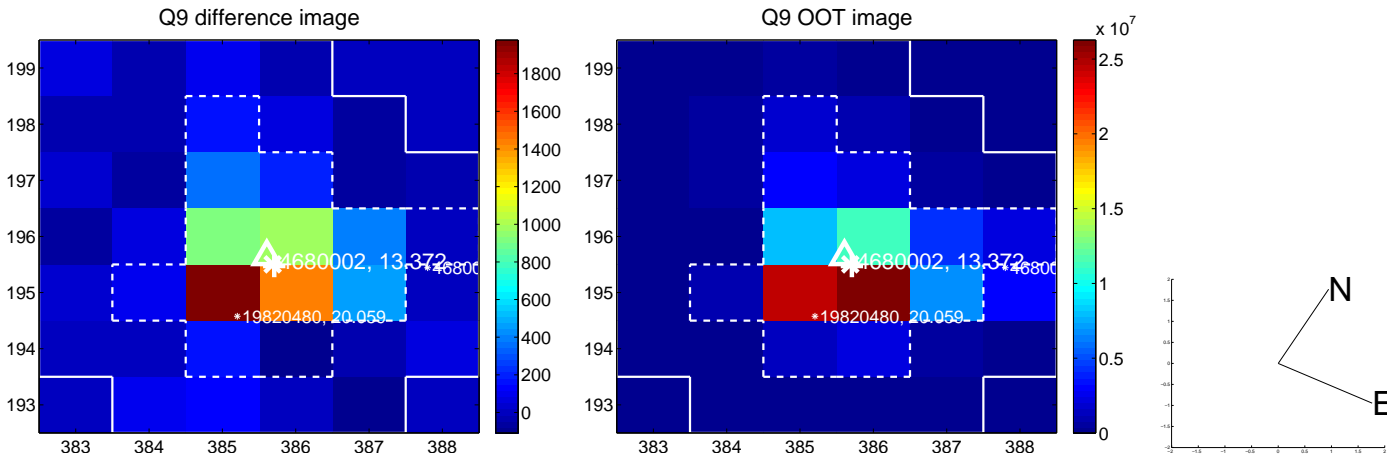
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



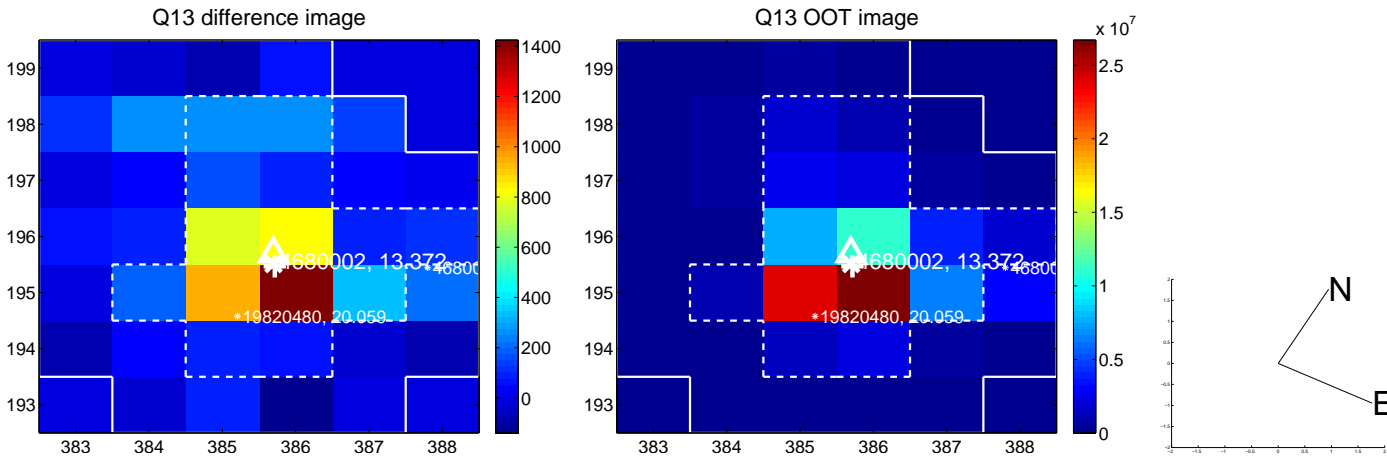
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



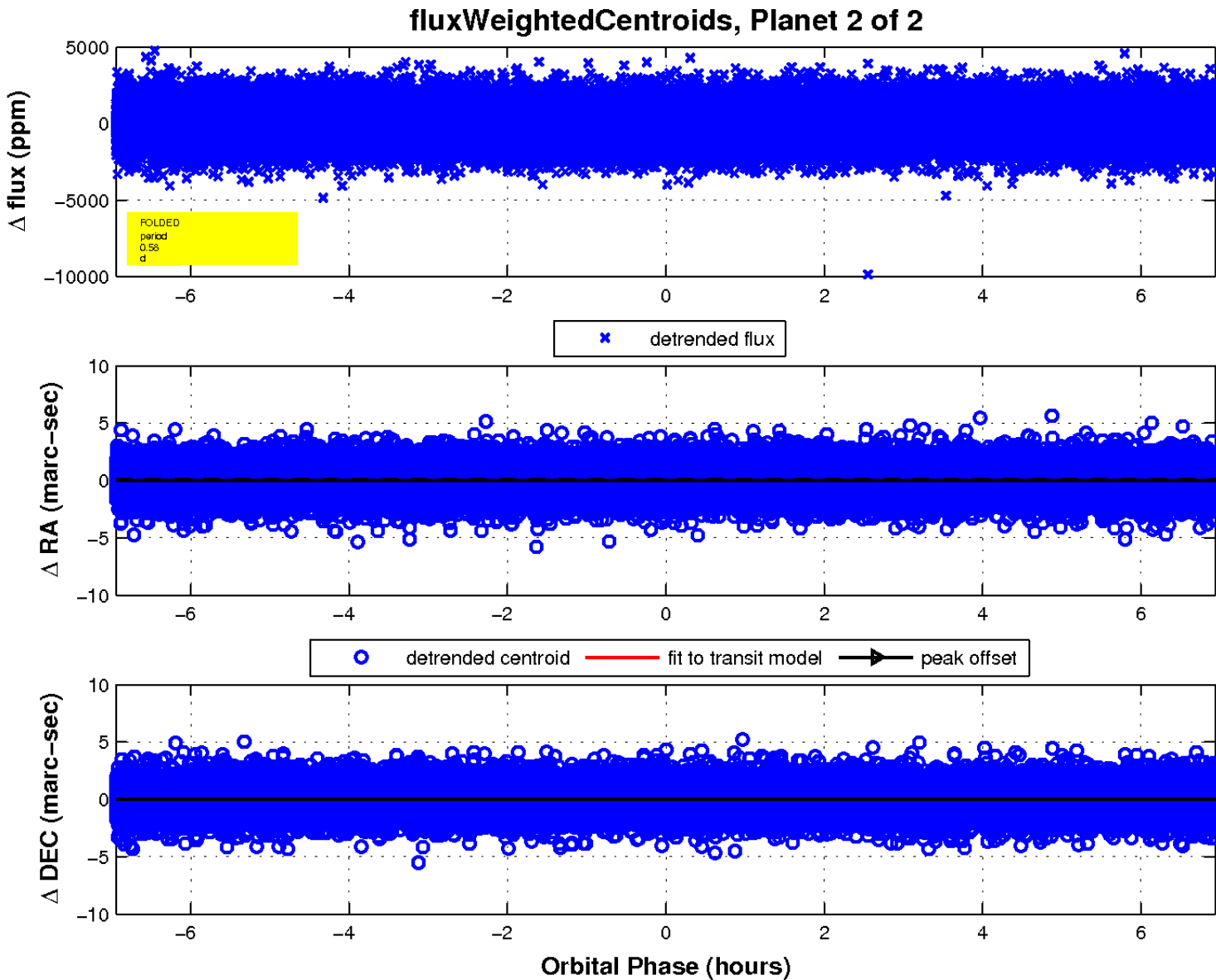
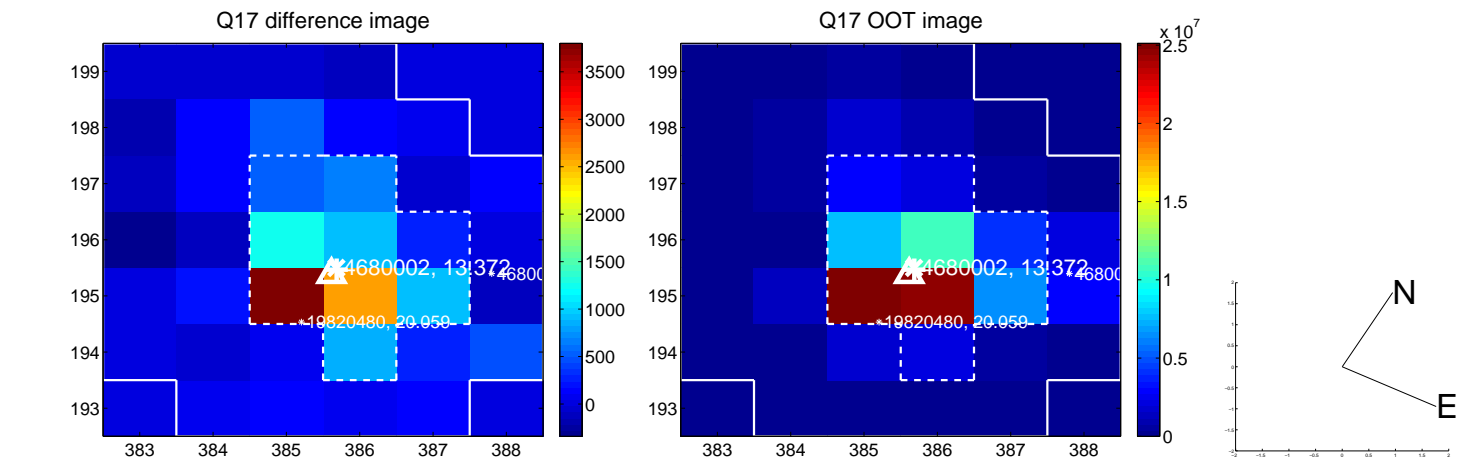
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

